TECHNICIANS GR.III/ELECTRICAL DEPARTMENT

I. Theoretical and Practical Knowledge Related to Working Areas

a) Simple Block schematic of temperature controls of Axle Shop and Wheel Shop Furnaces

1. The type of temperature sensor used in quench tank at Axle shop/RWF?

a. RTD

a. S type

b. N type

c. J type

Answer :A

2. The furnaces temperature in Old forge shop is controlled with the help of

a. Open loop control system

a. Closed loop control system

b. Both A and B

c. None of these

Answer :B

3. The type of Thermocouple used in RHF of New Axle Forge Shop?

a. S type

a. R type

b. J type

c. N type

Answer: A

4. PLC used for Temperature control in Old forge Complex is

a) Allen Bradley

b) b) Siemens

c) Mitsubishi

d) Fanuc

Answer: A

5. PLC used for Temperature control in New forge Complex is

a) Allen Bradley

b) b) Siemens

c) Mitsubishi

d) Fanuc

Answer: B

6. What is the main function of PLC(Allen Bradley) in Temperature Control system of RHF (Old Forge)

a) Measure gas pressure
b) b) Transmit Temperature Data to SCADA
c) PID control to control temperature
d) Increase gas supply

Answer : C

7. In RHF , PID Controller output is used to modulate _to control temperature

a) HMI Display Value
b) b) Thermocouple Voltage
c)Flue gas measurement
d) Gas & Air Control Valves

Answer : D

8. What is the function of HMI display in Temperature Control system at Old forge complex

a) To Send signal to control valves
b) Measure Pressure
c) Act as a back up controller
d) Display process values & Set Point Entry

Answer : D

9. In Temperature Control System at Forge shop, Which parameter is the process variable (PV) for the PID loop

a) Gas Valve opening percentage
b) PNG Pressure
c) Temperature measured by thermocouple
d) Air pressure

Answer : C

10. The Flue gas temperature is measured, mainly in temperature control system of Forge shop mainly to

a) Protect Thermocouple
b) Adjust Combustion Air/Fuel for efficiency
c) Regulate Cooling system
d) Open bypass Valve

Answer : B

11. The Energy saving system used in RHF

a) Recuperator
b) Blower
c) Compressor
d) Charging Arm

Answer :A

12. Which of the following is not a part of Temperature control system

a) PID Controller
b) Thermocouple
c) Furnace Door
d) Gas flow control Valve

Answer : C

13. What is the typical working temperature of RHF in Axle shop

a) Around 400 Deg C
b) b) Around700 Deg C
c) Around 1000 Deg C
d) Around 1200

Answer D

14. What is the primary function of the Burner Control Unit (BCU) in a RHF system?

A) To regulate furnace pressure
B) To manage ignition, flame sensing, and burner safety interlocks
C) To control air-fuel mixing ratios
D) To monitor load temperature

Answer: B)

15. In RHF-NF-TF Temperature control system, the ignition transformer is used to:

A) Increase flame detection sensitivity
B) Control flue gas temperature
C) Generate high-voltage spark for burner ignition
D) Convert analog signals to digital

Answer: C)

16. In the RHF control schematic, the flame sensor is used to:

A) Detect thermocouple faults
B) Verify successful burner ignition and continuous flame presence
C) Measure oxygen levels in flue gas

D) Monitor air pressure in the burner line

Answer: B)

17. The Normalizing Furnace (NF) in axle treatment is primarily used to:

A) Cool the axle rapidly

B) Soften the axle for machining

C) Refine the grain structure by heating above transformation temperature and air-cooling

D) Harden the axle surface only

Answer: C)

18. What happens if the flame sensor fails to detect a flame after ignition in RHF ?

A) The PLC ignores it and continues

B) The BCU continues gas flow

C) The BCU shuts off fuel supply and generates a fault

D) The thermocouple adjusts temperature

Answer: C

19. Which device ensures that the burner does not operate when there's no flame or unsafe condition used for temperature control in RHF?

A) PID controller

B) Burner Control Unit (BCU)

C) Furnace damper

D) Air regulator

Answer: B)

20. In Old Forge Shop __Which is True

a) RHF, NF & TF Temperature is controlled by single PLC

b) RHF & NF Temperature is controlled by single PLC

c) NF &TF Temperature is controlled by single PLC

d) All furnace Temperature controlled individually

Answer: A

21. The Software required to Trouble shoot PLC of Temperature Control system in Old Forge Complex

a) Step 7

b) b) TIA Portal

c) Studio Logix 5000

c) Rs logic 500

Answer : C

22. The software required to edit / modify HMI Screen of Temperature Control System of RHF

a) Factory Talk View
b) HMI Advance
c) TIA Portal
d) Step7

Answer A

23. In an RHF control system, the Air-Fuel Ratio (AFR) is maintained electronically to:

A) Maximize flue gas temperature
B) Ensure complete combustion and optimize thermal efficiency
C) Increase furnace load quickly
D) Improve ignition transformer output

Answer: B)

24. What is the effect of an improper AFR (too rich or too lean) in a gas-fired furnace?

A) PID controller resets automatically
B) Lower burner life and increased unburned fuel emissions
C) Enhanced thermal efficiency
D) Improved PLC scan time

Answer: B)

25. In PID-based electronic control for PNG burning(NF), what does the integral term (I) primarily help to eliminate?

A) Overshoot
B) High frequency noise
C) Steady-state error
D) Sensor drift

Answer: C)

26. Operator claims that , Temperature is not attaining 1200 Degree C In RHF. It was noticed that SP of Temperature is 1020 Degree & PV is 1025 Degree. Possible Cause for Temperature not attaining 1200 Degree.

A) Operator has wrongly set 1020 Degree instead of 1200
B) Burner Trips
C) Less Gas pressure
D) Low Air Pressure

Answer : A

27. In a PLC-based PID loop used in RHF , the derivative term (D) is used to:
A) Eliminate steady-state error
B) Reduce overshoot
C) Convert analog input to digital
D) Stabilize voltage fluctuations
Answer: B)

28. Which of the following is used as the manipulated variable in a PID loop controlling NF temperature in a PLC?
A) S-type thermocouple
B) Gas/Air control valve position
C) Furnace door actuator
D) PLC scan cycle timer
Answer: B)

29. A PID block in PLC gets its process variable (PV) from:
A) The output of the burner
B) The HMI
C) The connected sensor (thermocouple)
D) The operator panel
Answer: C

30. In a PLC logic diagram, the setpoint (SP) for temperature control is:
A) Always hardcoded in the PLC firmware
B) The maximum value from the thermocouple
C) User-defined input through HMI or SCADA
D) Measured by the flame sensor
Answer: C)

31. typical advantage of using PLC-based PID control in furnaces is:
A) Higher gas pressure output
B) Constant furnace temperature regardless of load
C) Real-time control with flexibility for tuning and interlocks
D) Automatic replacement of faulty sensors
Answer C

32. In New Forge Complex, RHF Control system
a) Displays all zone temperature & Burner Status
b) Displays only zone wise temperature
c) Displays only Burner Status
d) Display Only Specific zones status

Answer :A

33. In NAFL, RHF Temperature control system exchanges signals with

a) Long Forging Machine's Control System

b) Distributed Control System Used for Conveyor & Coordination

c) Both A&B

d) None

Answer :C

34. What is the main objective of a temperature control system in an oil-fired furnace in a wheel shop?
A) Maintain furnace humidity
B) Control temperature accurately for heat treatment
C) Reduce metal hardness
D) Increase oil viscosity
Correct Answer: B

35. In the block schematic, the **setpoint** refers to:
A) The temperature of cooling air
B) The target furnace temperature
C) Oil level in the tank
D) The speed of the fan
Correct Answer: B

36. Which device typically acts as the **sensor** in a temperature control system?
A) Pressure gauge
B) Flowmeter
C) Thermocouple or RTD
D) Ultrasonic transducer
Correct Answer: C

37. The **controller** in the system processes:
A) Voltage readings
B) Error signal (difference between setpoint and actual temperature)
C) Oil flow
D) Fan speed only
Correct Answer: B

38. What component receives the controller's output and adjusts the furnace conditions?
A) Sensor
B) Actuator (e.g., oil valve or burner modulator)
C) Mold
D) Thermometer
Correct Answer: B

39. In oil-fired furnaces, the **actuator** commonly adjusts:
A) Fuel oil flow and air supply to burners
B) Mold shape
C) Wheel casting pressure
D) Coolant pump
Correct Answer: A

40. The **feedback signal** in this system represents:
A) Oil pressure
B) Air speed
C) Actual furnace temperature
D) Wheel size
Correct Answer: C

41. A **PID controller** is preferred in furnace systems because it:
A) Cools the furnace faster
B) Offers precise and stable temperature control
C) Replaces thermocouples
D) Increases oil consumption
Correct Answer: B

42. The **process variable** in the temperature control block schematic is:
A) Desired temperature
B) Fan current
C) Actual furnace temperature
D) Operator input
Correct Answer: C

43. What is the role of a **comparator** in a closed-loop temperature control system?
A) Measures fuel level
B) Compares setpoint with feedback temperature
C) Filters air supply
D) Switches off the burner
Correct Answer: B

44. A **thermocouple** is best suited for furnace control because:
A) It has low cost and fast response
B) It needs no calibration
C) It controls pressure
D) It runs the actuator
Correct Answer: A

45. The **output** of the controller is used to:
A) Open the furnace door
B) Adjust burner intensity or oil valve
C) Increase wheel speed
D) Reduce mold flow
Correct Answer: B

46. Disturbances in the furnace control loop can be caused by:
A) Fluctuating oil supply
B) Ambient temperature changes
C) Heat loss during door opening
D) All of the above
Correct Answer: D

47. The **input** to the control system in block schematic terms is:
A) Power supply voltage
B) Desired temperature (setpoint)
C) Sensor calibration

D) Furnace material type
Correct Answer: B

48. In temperature control, the **dead time** refers to:
A) Delay between turning off the fan and cooling
B) Time between controller output and temperature response
C) Sensor calibration time
D) Burner ignition delay
Correct Answer: B

49. In wheel shops, maintaining precise furnace temperature is critical for:
A) Aesthetic finish of wheels
B) Metallurgical properties and structural integrity
C) Wheel diameter
D) Noise control
Correct Answer: B

50. The **actuator** can be:
A) Modulating burner
B) Servo-controlled oil valve
C) Variable air damper
D) All of the above
Correct Answer: D

51. What type of control action may result in the system responding too quickly and overshooting?
A) Integral only
B) Proportional only
C) Derivative only
D) PID
Correct Answer: B

52. In an oil-fired furnace, temperature control failure could lead to:
A) Incomplete heat treatment
B) Fuel wastage
C) Component damage
D) All of the above
Correct Answer: D

53. Closed-loop control is preferred in furnace systems because:
A) It is cheaper
B) It eliminates the need for sensors
C) It continuously adjusts to reach and maintain setpoint
D) It allows manual override
Correct Answer: C

54. A **burner control unit** in the actuator block regulates:
A) Combustion air and fuel mixture
B) Wheel speed
C) Mold position
D) Exhaust fan noise
Correct Answer: A

55. A **digital temperature controller** typically uses:
A) Bimetallic strip
B) Relay logic
C) Microprocessor-based logic
D) Magnetic compass
Correct Answer: C

56. The **output signal** from a PID controller could be:
A) ON/OFF
B) Analog (4–20 mA or 0–10 V)
C) Binary
D) None of the above
Correct Answer: B

57. The **response time** of the control system affects:
A) Visual appearance of wheels
B) Furnace structure
C) Accuracy of temperature control
D) Fuel tank size
Correct Answer: C

58. In modern wheel shops, temperature control systems are often integrated with:
A) Conveyor belts
B) SCADA or HMI systems for real-time monitoring
C) Gear systems
D) Water pumps
Correct Answer: B

b) <u>Operations and controls of EOT Cranes</u>

59. Which is not a common maintenance hazard with cranes
A) Damage to wire rope
B) Alignment Issues
C) Bent/ damaged hooks
D) Chipped Paint
Ans: D

60. An overhead crane that consist of parallel runways with a travelling bridge is known as
A) Road mobile Crane
B) Monorail Crane
C) Bridge crane
D) Jib crane
Ans: C

61. Type of crane where a horizontal beam extends to lift and move a load along the beam is known as
A) Gantry Crane
B) Monorail Crane
C) Bridge crane

D) Jib crane
Ans: D

62. A crane that is shut down for various reasons should be
A) Sold out
B) Kept Open
C) Locked out and tagged out
D) Painted black
Ans: C

63. Preventive maintenance is
A) Maintenance carried out before an issue is identified
B) Maintenance carried out after an issue is identified
C) Maintenance carried out after an accident
D) None of the above
Ans: A

64. What is full form of L.T pertaining to EOT cranes?
A) Limited travel
B) Longitudinal travel
C) Long travel
D) Lengthy travel
Ans: B

65. What is full form of C.T pertaining to EOT cranes?
A) Complete travel
B) Common travel
C) Cross travel
D) Close travel
Ans: C

66. What is the full form of M.H pertaining to EOT cranes?
A) Material Handling
B) Mini Hoist
C) Main Hoist
D) Main Handle
Ans: C

67. What is full form of A.H pertaining to EOT cranes?
A) Additional Handle
B) Auxiliary Hoist
C) Additional Hoist
D) None of the above
Ans: B

68. Hand signal during operations are used when
A) the operator ia deaf
B) voice communications can not be heard
C) rigger ia dumb
D) none of the above

Ans: B

69. ____ is used to douze general fire
A) Fire extinguisher
B) Life guard
C) Alcohol
D) Air blowing
Ans: A

70. Crane driver should accept emergency stop from
A) Only rigger engaged with his crane
B) all riggers at site
C) anybody working at site
D) Only his supervisor
Ans: C

71. At a time crane driver should accept signals from
A) Only rigger engaged with his crane
B) all riggers at site
C) anybody working at site
D) Only his supervisor
Ans: A

72. Total number of EOT cranes in the Axle Forge shop is
A) 2
B) 4
C) 5
D) 3
Ans: C

73. Total number of EOT cranes in the Axle machine shop is
A) 2
B) 4
C) 3
D) 5
Ans: B

74. Total number of EOT cranes in the Axle Assembly Bay is
A) 1
B) 2
C) 3
D) 4
Ans: D

75. Total number of EOT cranes in the Wheelset loading Bay is
A) 2
B) 3
C) 4
D) 5
Ans: B

76. Total number of EOT cranes in the SPC Bay is
A) 2
B) 3
C) 4
D) 5
Ans: C

77. Axle Shop Control is carrying out the electrical maintenance activities of ____ number of cranes in RWF
A) 13
B) 16
C) 20
D) 21
Ans: C

78. 10 Ton capacity crane is used in which area of the Axle shop?
A) Forge Shop
B) Machine Shop
C) Assembly Shop
D) None of the above
Ans: B

79. All the Assembly shop cranes are of
A) 10T
B) 5T
C) 15T
D) 3T
Ans: B

80. Capacity of Axle forge shop cranes is
A) 5T
B) 10T
C) 15T
D) 20T
Ans: C

81. Maximum used Auxiliary hoist capacity of EOT cranes in Axle shop is
A) 2T
B) 3T
C) 5T
D) None of the above
Ans: D

82. The safety devices of EOT cranes include
A) Anti Collision device
B) Rotary switches
C) Over travel switches
D) All of these
Ans: D

83. How many corner switches will be there in an EOT crane in general
A) 1
B) 2
C) 4
D) 3
Ans: C

84. If any of the corner switch is operated, then _____
A) LT operation will be stopped
B) CT operation will be stopped
C) Hoist operation will be stopped
D) All operations of the crane will be stopped
Ans: D

85. The saftey device which is used to limit the upward movement of the hoist operation is
A) Rotary switch
B) Gravity swich
C) All of the above
D) None of the above
Ans: C

86. When the gravity switch is operated
A) Hoist operation will be stopped
B) All operations will be stopped
C) LT operation will be stopped
D) None of the above
Ans: B

87. Which of the following act as a secondary safety device
A) Gravity switch
B) Rotary switch
C) Over travel switches
D) Corner switches
Ans: A

88. All the safety devices of the EOT cranes are controlled by
A) Protective panel
B) Auxiliary Hoist panel
C) Main Hoist panel
D) Rectifier panel
Ans: A

89. Rectangular magnet is used in
A) Axle forge shop
B) Machine shop
C) Assembly shop
D) None of these
Ans: A

90. The capacity of rectangular magnets in the axle forge shop is
A) 1kw
B) 2kw
C) 3kw
D) 5kw
Ans: B

91. Capacity of circular magnets in the SPC bay is
A) 15kw
B) 18.5kw
C) 20kw
D) 22.5kw
Ans: B

92. Circular magnets are used for
A) Lifting hot axles from the furnace discharge area
B) Loading and unloading of blooms
C) Both A and B
D) Lifting of Scraps
Ans: D

93. Rectangular magnets are used for
A) Lifting hot axles from the furnace discharge area
B) Loading and unloading of blooms
C) Both A and B
D) Lifting of Scraps
Ans: C

94. Capacity of battery bank in the Forge shop cranes are
A) 110V
B) 220V
C) 400V
D) None of the above
Ans: A

95. Capacity of battery bank in the SPC bay cranes are
A) 110V
B) 220V
C) 400V
D) None of the above
Ans: B

96. Periodical maintenance of EOT cranes are carried out
A) monthly
B) quarterly
C) half yearly
D) All of the above
Ans: D

97. Recommended duty cycle of motors used in the EOT cranes are
A) S1
B) S4
C) Any of these
D) None of these
Ans: B

98. How many LT motors are there in each 15/2 T cranes of Axle shop?
A) 1
B) 2
C) 3
D) 4
Ans: D

99. 41. How many LT motors are there in the 5T EOT cranes of Axle shop?
A) 1
B) 2
C) 3
D) 4
Ans: B

100. What is the capacity of LT motors in the Forge shop EOT cranes?
A) 5.5 kw
B) 9.3kw
C) 7.5kw
D) 15kw
Ans: B

101. What is the capacity of CT motors in the Forge shop EOT cranes?
A) 5.5kw
B) 9.3kw
C) 7.5kw
D) 15kw
Ans: A

102. What is the full form of DSL in EOT cranes
A) Duct system line
B) Down supply lead
C) Digital subscriber line
D) Direct supply line
Ans: B

103. Type of motor starter used in the EOT cranes is
A) DOL
B) Star delta
C) VFD
D) None of the above
Ans: VFD

104. Full form of DBR in EOT cranes
A) Dynamic braking recorder
B) Drive braking resistance
C) Diminishing brake resistance
D) None of the above
Ans: B

105. Panel used for charging of batteries of EOT crane is known as
A) Magnet panel
B) Hoist panel
C) Rectifier panel
D) Protective panel
Ans: C

106. Full form of VFD is
A) Voltage Frequency drive
B) Variable frequency drive
C) Variable fraction drive
D) Voltage fixed drive
Ans: B

107. Which of the following is a beat practice for operating a crane?
A) Conducting a pre shift inspection
B) Speeding up operations to save time
C) Ignoring hand signals if they seem unclear
D) Operating the crane at the maximum capacity for efficiency
Ans: A

108. Supply to the break thrusters of an EOT crane is
A) 415 VAC
B) 220VAC
C) 110VAC
D) 110VDC
Ans: A

c) <u>Controls used in important machines like arc furnace, wheel borer, forging M/c and Wheel Casting</u>

109. Table drive for (SMTC) wheel Bore at Assembly shop is
a) 50 HP DC Motor with Drive
b) 50 Hp gear AC motor without drive
c) 50 HP AC Motor with VFD
d) None of this
Answer: C

110. PLC Controller used in SMTC Wheel Borer is
a) Allen Bradley SLC500
b) Allen Bradley SLC 5
c) Siemens S7 1200
d) Siemens S7 1500

Answer: A

111. Wheel Seat diameter measured at WSMS station will be accessed by SMTC Wheel Boring station in____method
a) LIFO
b) FIFO
c) LILO
d)LIFO
Answer: B

112. Final Wheel Bore Diameter is based on
a) Initial Wheel Bore Diameter
b) Wheel seat Diameter of Axle
c) Interference fit value
d) All of the above
Answer: D

113. In SMTC Wheel Borer, controller gets current Vertical Ram Position from
a) Encoder
b) Linear Scale
c) Limit Switch
c) Proximity Switch
Answer: A

114. In SMTC Wheel Borer, control system used for Tool position is
a) Manual Open loop system
b) Automatic Open loop system
c) Closed loop control system
d) None of the above
Answer: B

115. In SMTC Wheel Borer the tool position (inward & outward) is controlled by
a) EBB Motor
b) Tacho generator
c) Encoder
d) A, B&C in closed loop
Answer: D

116. After power failure, SMTC Wheel Borer requires calibration of
a) Vertical Ram
b) Electronic Boring Bar
c) A&B
d) Calibration Not required
Answer: C

117. What means is used for measurement of Wheel seat in SMTC mounting press?
a) Rotary Encorder
b) Stepper Motor
c) Linear Scale

d) All of these

Answer : C

118. In New Wheel Press Complex commissioned in 2019, Siemens 828D bases CNC control system is used in

a) Press
b) Wheel Borers
c) Measuring Station
d) Conveyors

Answer : B

119. Name the PLC Troubleshooting software used in long forging machine?

a) TIA Software
b) Step 7
c) RS Logix
d) Compact

Logix Answer :A

120. What is the voltage rating of Forging motors in Axle shop?

a) 6.6 KV
b) 66 KV
c) 11 KV
d) 440 V

Answer : A

121. In New Wheel Borers (HYT), Vertical ram movement & Horizontal Boring bar movement in controlled using

a) Servo motors
b) Servo motors & Hydraulic
c) Hydraulic only
d) Pneumatic

Answer: A

122. PLC Control system used in Long Forging Machine is of__Make

a) Allen Bradley
b) Fanuc
c) Siemens
d) None of the above

Answer :C

123. In Old Forge Complex, Full Chuck head's position feed back is given by

a) Wire rope encoder
b) Laser Sensor
c) Proximity Switch
d) Limit Switch

Answer :A

124. In New Forge Complex, Full Chuck head's position feed back is given by
a) Wire rope encoder
b) Laser Sensor
c) Proximity Switch
d) Limit Switch
Answer :B

125. Old Long Forging Machine have __& _____Control systems
a) CNC & PLC
b) PLC & SCADA
c) CNC & DCS
d) SCADA & DCS
Answer : A

126. In Long Forging Machine , for proper Forging to happen
a) Lubrication system should be On
b) Hydraulic System Should be On
c) Drives Should be On
d) All of the Above
Answer : D

127. In Forging Machine , Scope is recorded for
a) Analyzing Various Conditions
b) To reset the machine
c) To autotune
d) None of this
Answer : A

128. In New Forging Machine , __Nos Motors are uses for Forging
a) 1
b) 2
c) 3
d)4
Answer : D

129. Work piece rotation of Axles is done using _KW Motor
a) 90
b) 120
c) 150
d) 180
Answer : A

130. In New Forging Machine , Motors used for forging(hammer) is each of __KW

a) 150

b) 200

c) 250

d) 300

Answer : C

131. In New Forging Machine(at NAFL Commissioned in 2022) , Each forging Motors are of _____V

a) 66000

b) 6600

c)11000

d) 415

Answer : D

132. What is the primary function of the thyristor control in an electric arc furnace?
A) Control the arc length
B) Control the power supply to the furnace
C) Measure the furnace temperature
D) Cool the furnace electrodes
Answer: B

133. Which sensor is commonly used to measure the electrode position in an arc furnace?
A) Proximity sensor
B) LVDT (Linear Variable Differential Transformer)
C) Thermocouple
D) Pressure sensor
Answer: B

134. The role of the electrode servo mechanism is to:
A) Adjust electrode current
B) Maintain electrode position
C) Control furnace temperature
D) Measure power factor
Answer: B

135. What is the typical feedback parameter for controlling furnace power?
A) Electrode position
B) Arc voltage and current
C) Furnace temperature only
D) Ambient humidity
Answer: B

136. The main safety feature in arc furnace control systems is:
A) Overcurrent protection
B) Overvoltage protection
C) Electrode break detection

D) Temperature alarms
Answer: C

137. What type of control system is commonly used for electrode regulation?
A) ON/OFF control
B) PID control
C) Manual control
D) Relay logic control
Answer: B

138. What does SCR stand for in arc furnace power control?
A) Silicon Controlled Rectifier
B) Standard Control Relay
C) Simple Current Regulator
D) Servo Control Reactor
Answer: A

139. What is the main reason for maintaining proper electrode gap in arc furnace?
A) To ensure correct arc stability
B) To cool the furnace
C) To reduce dust emissions
D) To increase fuel efficiency
Answer: A

140. Which device is used to measure the current in an arc furnace circuit?
A) Current transformer (CT)
B) Thermocouple
C) Strain gauge
D) Flow meter
Answer: A

141. What is the purpose of water cooling in arc furnace electrodes?
A) To cool the molten metal
B) To prevent electrode overheating
C) To increase arc length
D) To reduce electrical resistance
Answer: B

142. What kind of power supply is typically used for arc furnaces?
A) DC supply
B) Three-phase AC supply
C) Single-phase AC supply
D) Battery supply
Answer: B

143. The electrode lift mechanism is usually driven by:
A) Hydraulic system
B) Pneumatic system
C) Electric motor
D) Manual crank

Answer: A

144. Which parameter is NOT typically monitored in arc furnace operation?
A) Arc current
B) Electrode position
C) Furnace water temperature
D) Ambient humidity
Answer: D

145. The arc furnace transformer is equipped with a tap changer to:
A) Adjust output voltage
B) Cool the transformer
C) Measure current
D) Control electrode gap
Answer: A

146. What is the role of the control panel in an arc furnace?
A) To house controllers, monitors, and operator interfaces
B) To cool the electrodes
C) To move the furnace
D) To melt metal
Answer: A

147. Which of the following protects the furnace from overcurrent?
A) Circuit breakers
B) Cooling fans
C) Voltage regulators
D) Thermocouples
Answer: A

148. What does the term ‘arc stability’ refer to?
A) Consistent arc length and power
B) Changing arc voltage
C) Electrode wear rate
D) Cooling water flow rate
Answer: A

149. Which control element adjusts the arc length in real-time?
A) Electrode lift servo system
B) Cooling pump
C) Transformer tap changer
D) Temperature controller
Answer: A

150. What device is used for measuring the voltage across arc furnace electrodes?
A) Potential transformer (PT)
B) Thermocouple
C) Pressure sensor
D) Current transformer
Answer: A

151. How is the arc furnace power factor improved?
A) By installing capacitors or synchronous condensers
B) Increasing arc length
C) Lowering water flow
D) Reducing electrode diameter
Answer: A

152. The typical arc furnace cycle includes:
A) Charging, melting, refining, tapping
B) Heating, cooling, machining
C) Pouring, drilling, painting
D) Casting, forging, boring
Answer: A

153. Which instrument is used to measure furnace temperature indirectly?
A) Infrared pyrometer
B) Pressure gauge
C) Thermistor
D) Tachometer
Answer: A

154. What safety interlock is critical in electrode lift control?
A) Electrode break detection
B) Cooling water flow switch
C) Furnace door sensor
D) Power supply fuse
Answer: A

155. What does SCR firing angle control affect?
A) Power delivered to the furnace
B) Electrode temperature
C) Cooling water flow
D) Furnace water level
Answer: A

156. The furnace tap operation is controlled by:
A) Motorized tap changer mechanism
B) Manual lever
C) Hydraulic press
D) Pneumatic cylinder
Answer: A

157. The function of arc furnace busbars is to:
A) Conduct high current between transformer and furnace
B) Support electrodes
C) Cool molten metal
D) Measure temperature
Answer: A

158. How is electrode wear detected in arc furnace controls?
A) Monitoring electrode length and current changes
B) Measuring water flow
C) Temperature monitoring
D) Pressure sensors
Answer: A

159. What is the importance of furnace earthing?
A) To protect personnel and equipment from electrical faults
B) To reduce electrode wear
C) To control arc length
D) To cool the furnace
Answer: A

160. What happens when the electrode breaks during operation?
A) Automatic lift-off and shutdown occurs
B) Furnace continues normally
C) Power increases
D) Electrode temperature rises
Answer: A

161. Which PLC function is critical in arc furnace control?
A) Sequence control and interlocks
B) Motor speed control
C) Pressure regulation
D) Temperature control only
Answer: A

162. What is the role of electrode holders?
A) To grip and conduct electricity to electrodes
B) To cool electrodes
C) To regulate furnace power
D) To monitor arc voltage
Answer: A

163. Which factor influences the electrode's life the most?
A) Arc stability and current density
B) Cooling water temperature
C) Furnace door opening
D) Ambient temperature
Answer: A

164. Which instrument provides operator feedback on arc furnace power consumption?
A) Power analyzer or energy meter
B) Tachometer
C) Temperature controller
D) Pressure gauge
Answer: A

165. How is slag formation monitored in arc furnaces?
A) By temperature and chemical analysis sensors
B) Current transformers
C) Position sensors
D) Flow meters
Answer: A

166. Which is a common power quality problem in arc furnace operation?
A) Harmonics in power supply
B) Excess water flow
C) Electrode vibration
D) Low temperature
Answer: A

167. How can arc furnace control systems reduce power consumption?
A) By optimizing arc length and power factor correction
B) Increasing electrode size
C) Reducing water cooling
D) Increasing furnace ambient temperature
Answer: A

168. What component limits the maximum current in arc furnace?
A) Current limiting reactors or transformers
B) Cooling fans
C) Thermocouples
D) Busbars
Answer: A

169. Which of these is NOT a control parameter in arc furnace operation?
A) Electrode gap
B) Arc voltage
C) Molten metal viscosity
D) Arc current
Answer: C

170. What is the primary energy source in an electric arc furnace?
A) Electric arc between electrodes and scrap metal
B) Combustion of fuel
C) Solar power
D) Hydraulic pressure
Answer: A

171. How is furnace tapping typically automated?
A) Using motorized tap changer and PLC control
B) Manual lever operation only
C) Pneumatic cylinders
D) By changing electrode current
Answer: A

172. What causes electrode sticking?
A) Excessive current or arc instability
B) Low furnace temperature
C) High water flow
D) Low ambient humidity
Answer: A

173. What kind of feedback loop is used for electrode position control?
A) Closed-loop feedback with LVDT and servo motor
B) Open-loop only
C) Manual control only
D) None
Answer: A

174. Which parameter is used to trigger arc furnace power reduction during operation?
A) Overcurrent or short circuit detection
B) Temperature only
C) Ambient humidity
D) Water pressure
Answer: A

175. What type of cooling is used for arc furnace transformer?
A) Oil and water cooling
B) Air cooling only
C) Fan cooling only
D) None
Answer: A

176. Which safety feature prevents furnace overheating?
A) Temperature sensors and alarms
B) Power meter
C) Pressure gauges
D) Flow sensors
Answer: A

177. What is the function of the furnace shell?
A) To contain molten metal and scrap
B) To conduct electricity
C) To cool electrodes
D) To measure power
Answer: A

178. The control of furnace atmosphere (e.g., inert gas injection) affects:
A) Metal quality and slag formation
B) Electrode current
C) Cooling water flow
D) Furnace weight
Answer: A

179. What is the main reason for periodic electrode replacement?
A) Electrode wear and breakage
B) Furnace temperature rise
C) Cooling system failure
D) Power fluctuations
Answer: A

180. What device is used to measure the furnace current waveform?
A) Current transformer with waveform analyzer
B) Thermocouple
C) Pressure sensor
D) Flow meter
Answer: A

181. Which communication protocol is commonly used for remote arc furnace monitoring?
A) Modbus or Profibus
B) Bluetooth only
C) Wi-Fi only
D) None
Answer: A

182. What is the primary control parameter in a wheel borer machine?
A) Spindle speed and feed rate
B) Furnace temperature
C) Electrode position
D) Wheel diameter
Answer: A

183. Which sensor is typically used to detect tool position in a wheel borer?
A) LVDT
B) Limit switch
C) Thermocouple
D) Pressure sensor
Answer: B

184. The feedback in wheel borer controls is mainly used for:
A) Monitoring tool wear
B) Position and speed regulation
C) Temperature measurement
D) Electrode adjustment
Answer: B

185. What type of controller is commonly used in CNC wheel borer machines?
A) PID controller
B) Relay logic
C) Manual control
D) Thermostat
Answer: A

186. The function of coolant system control in wheel borer is to:
A) Cool the cutting tool and workpiece
B) Heat the metal
C) Control wheel rotation
D) Measure spindle speed
Answer: A

187. **Servo** motor and controller
B) Thermostat
C) Limit switch
D) Pressure valve
Answer: A

188. Which safety device is essential in wheel borer machines?
A) Emergency stop switch
B) Furnace temperature alarm
C) Electrode gap sensor
D) Cooling water pressure sensor
Answer: A

189. What is the role of spindle drive control?
A) Regulate the rotational speed of the cutting tool
B) Control coolant flow
C) Adjust electrode position
D) Control furnace temperature
Answer: A

190. What type of feedback is used in spindle speed control?
A) Tachometer feedback
B) Pressure sensor feedback
C) Temperature feedback
D) Flow meter feedback
Answer: A

191. The axis movement in a wheel borer is usually controlled by:
A) Hydraulic cylinder
B) Servo motor and drive
C) Pneumatic actuator
D) Manual crank
Answer: B

192. What is the purpose of the tool changer in CNC wheel borer machines?
A) To automate tool replacement
B) To cool tools
C) To measure tool wear
D) To control spindle speed
Answer: A

193. Which device provides positional accuracy in wheel borer machines?
A) Encoders
B) Thermocouples
C) Pressure sensors
D) Flow meters
Answer: A

194. The coolant flow rate is typically controlled by:
A) Flow control valves with feedback
B) Manual switches only
C) Temperature sensors
D) Limit switches
Answer: A

195. What is a common cause for vibration in wheel borer operation?
A) Imbalance in spindle or tool
B) Overheating of electrodes
C) Excess coolant flow
D) High furnace temperature
Answer: A

196. What kind of sensors monitor tool wear in advanced wheel borers?
A) Acoustic emission sensors
B) Thermocouples
C) Pressure sensors
D) Flow meters
Answer: A

197. Which control component regulates the speed of the hydraulic actuator in the wheel borer?
A) Proportional valve
B) Limit switch
C) Pressure relief valve
D) Thermostat
Answer: A

198. What does the term “axis backlash” mean in the context of wheel borer controls?
A) Play or looseness in mechanical movement
B) Overheating of motor
C) Excess coolant flow
D) Tool wear rate
Answer: A

199. The operator interface in a CNC wheel borer typically includes:
A) Touchscreen panel with control software
B) Manual switches only
C) Thermostat
D) Pressure gauge
Answer: A

200. What role do limit switches play in wheel borer machines?
A) Detect end of travel to prevent overrun
B) Measure spindle speed
C) Control coolant temperature
D) Monitor hydraulic pressure
Answer: A

201. Which motor type is commonly used for spindle drives in wheel borers?
A) AC induction motor
B) Hydraulic motor
C) Pneumatic motor
D) DC servo motor
Answer: A

202. What is the typical feed mechanism in wheel borers?
A) Ball screw driven by servo motor
B) Manual crank
C) Pneumatic cylinder
D) Hydraulic ram
Answer: A

203. Which controller is primarily responsible for coordinating multi-axis movements?
A) CNC controller
B) PID controller
C) Relay logic
D) Thermostat
Answer: A

204. What does “tool offset” refer to in wheel borer CNC programming?
A) Compensation for tool length or diameter variations
B) Tool cooling parameters
C) Spindle speed limits
D) Hydraulic pressure limits
Answer: A

205. Which type of feedback device measures rotational position of the spindle?
A) Rotary encoder
B) LVDT
C) Thermocouple
D) Pressure sensor
Answer: A

206. What is the purpose of the spindle brake in wheel borers?
A) To quickly stop spindle rotation for safety
B) To start the spindle
C) To adjust coolant flow
D) To measure spindle speed
Answer: A

207. What safety measure protects the machine from overload?
A) Torque sensors or current limiters
B) Thermocouples
C) Flow meters
D) Pressure sensors
Answer: A

208. What is the main advantage of closed-loop control in wheel borers?
A) Increased accuracy and repeatability
B) Lower coolant consumption
C) Reduced spindle speed
D) Manual operation
Answer: A

209. Which system handles emergency shutdown in wheel borers?
A) Emergency stop circuits and PLC interlocks
B) Manual switches only
C) Thermostats
D) Pressure valves
Answer: A

210. What role do hydraulic accumulators play in wheel borer control?
A) Maintain consistent hydraulic pressure
B) Cool the spindle
C) Measure feed rate
D) Adjust spindle speed
Answer: A

211. How is spindle temperature commonly monitored?
A) Thermocouples or RTDs mounted on spindle housing
B) Pressure sensors
C) Flow meters
D) Limit switches
Answer: A

212. The wheel borer's table movement is controlled by:
A) Servo motor and linear guide system
B) Hydraulic ram only
C) Pneumatic actuator
D) Manual crank
Answer: A

213. What type of lubrication system is typically used in wheel borers?
A) Automatic centralized lubrication
B) Manual oiling
C) No lubrication needed
D) Water cooling only
Answer: A

214. How does the machine detect a tool breakage?
A) Sudden drop in spindle load or acoustic sensors
B) Thermocouple readings
C) Pressure fluctuations
D) Limit switch activation
Answer: A

215. What is the function of the chip conveyor in wheel borers?
A) Remove metal chips from the work area
B) Cool the spindle
C) Measure spindle speed
D) Control coolant flow
Answer: A

216. Which device measures spindle vibration?
A) Accelerometer
B) Thermocouple
C) Pressure sensor
D) Flow meter
Answer: A

217. What is the typical voltage supply for wheel borer motors?
A) 3-phase AC, 415 V
B) Single-phase AC, 220 V
C) DC, 24 V
D) Battery supply
Answer: A

218. How are wheel borer axis movements programmed?
A) Using G-code in CNC controllers
B) Manual lever operation
C) Thermostat settings
D) Pressure valve adjustments
Answer: A

219. What is the purpose of the spindle speed override control?
A) Allow operator to adjust speed during operation
B) Turn off the spindle
C) Change coolant flow
D) Stop feed movement
Answer: A

220. Which communication protocol is widely used in CNC wheel borers?
A) Ethernet/IP or Profibus
B) Bluetooth only
C) Wi-Fi only
D) None
Answer: A

221. What is the effect of backlash in CNC wheel borer axes?
A) Positional errors and reduced accuracy
B) Increased spindle speed
C) Reduced coolant flow
D) Lower power consumption
Answer: A

222. Which component converts electrical signals into mechanical motion in wheel borer axes?
A) Servo motor
B) Thermostat
C) Pressure valve
D) Flow meter
Answer: A

223. The spindle speed sensor output is typically:
A) Digital pulse signal proportional to RPM
B) Analog voltage proportional to temperature
C) Pressure reading
D) Flow measurement
Answer: A

224. What is the typical cycle time controller used in wheel borer CNC machines?
A) PLC or CNC controller timer
B) Manual stopwatch
C) Thermostat timer
D) Pressure switch timer
Answer: A

225. What is the purpose of the homing cycle in CNC wheel borers?
A) To establish a known reference position
B) To start the spindle
C) To cool the tool
D) To adjust coolant flow
Answer: A

226. What kind of feedback loop ensures precise tool positioning?
A) Closed-loop with encoder feedback
B) Open-loop control
C) Manual control only
D) None
Answer: A

227. How is spindle load monitored in wheel borers?
A) Current sensors on motor supply
B) Temperature sensors
C) Pressure sensors
D) Flow meters
Answer: A

228. What is the purpose of a tool length sensor?
A) To measure and compensate tool length in programming
B) To cool the tool
C) To measure spindle speed
D) To control coolant flow
Answer: A

229. Which parameter is critical for wheel borer surface finish?
A) Feed rate and spindle speed
B) Cooling water pressure
C) Electrode gap
D) Furnace temperature
Answer: A

230. How is spindle torque controlled?
A) By adjusting motor current through drive controllers
B) Changing coolant flow
C) Adjusting spindle brake
D) Manual control only
Answer: A

231. What is the role of servo drive tuning in wheel borers?
A) To optimize axis response and accuracy
B) To control coolant flow
C) To adjust spindle speed
D) To monitor temperature
Answer: A

232. What is the primary control parameter in forging machines?
A) Ram position and speed
B) Electrode gap
C) Spindle speed
D) Cooling water flow
Answer: A

233. Which sensor is commonly used to measure ram position in forging machines?
A) LVDT (Linear Variable Differential Transformer)
B) Thermocouple
C) Pressure sensor
D) Flow meter
Answer: A

234. What type of actuator is generally used to drive the ram in forging presses?
A) Hydraulic cylinder
B) Pneumatic cylinder
C) Electric motor
D) Manual lever
Answer: A

235. The speed of the ram in forging machines is usually controlled by:
A) Proportional hydraulic valves
B) Thermostat
C) Pressure relief valves
D) Manual control
Answer: A

236. What is the role of a pressure transducer in a forging machine?
A) Measure hydraulic pressure in the system
B) Measure temperature of the workpiece
C) Measure flow rate of cooling water
D) Detect tool wear
Answer: A

237. Which control strategy is commonly used for ram position control?
A) Closed-loop position control using LVDT feedback
B) Open-loop control only
C) Manual control without feedback
D) Thermostat control
Answer: A

238. What safety device prevents ram overtravel?
A) Limit switches
B) Thermocouples
C) Flow meters
D) Pressure sensors
Answer: A

239. How is forging force monitored?
A) Using strain gauge load cells
B) Using thermocouples
C) Using pressure gauges only
D) Using flow meters
Answer: A

240. Which type of controller is preferred for hydraulic servo systems in forging presses?
A) PID controller
B) Relay logic
C) Manual switches
D) Thermostat
Answer: A

241. What is the purpose of a servo valve in forging machine hydraulics?
A) Precisely regulate hydraulic fluid flow
B) Measure hydraulic pressure
C) Detect tool wear
D) Measure temperature
Answer: A

242. Which component provides feedback on ram velocity?
A) Differentiated output from LVDT or encoder
B) Pressure sensor
C) Thermocouple
D) Flow meter
Answer: A

243. What does the term "deadband" refer to in forging machine control?
A) A small range of input where output does not change
B) Maximum hydraulic pressure
C) Minimum flow rate
D) Maximum temperature
Answer: A

244. The forging cycle typically includes:
A) Ram approach, forging stroke, and return stroke
B) Cooling only
C) Electrode gap adjustment
D) Spindle speed control
Answer: A

245. How is overheating of hydraulic oil prevented?
A) Using oil coolers and temperature sensors
B) Using pressure relief valves only
C) Using limit switches
D) Manual inspection only
Answer: A

246. What is the function of an accumulator in forging hydraulics?
A) Store hydraulic energy for quick release
B) Measure hydraulic pressure
C) Control coolant flow
D) Detect ram position
Answer: A

247. Which parameter affects the quality of forged parts most?
A) Ram speed and force profile
B) Cooling water flow
C) Electrode position
D) Spindle speed
Answer: A

248. How is the forging pressure controlled?
A) By regulating hydraulic pump output and servo valves
B) By adjusting coolant flow
C) By changing spindle speed
D) Manually only
Answer: A

249. What is the typical power source for forging machine hydraulics?
A) Electric motor-driven hydraulic pump
B) Pneumatic compressor
C) Battery
D) Manual lever
Answer: A

250. How is the ram speed typically varied during forging?
A) By changing the servo valve input
B) By adjusting temperature
C) By turning a manual knob
D) By changing spindle speed
Answer: A

251. What is the role of a pressure relief valve in forging hydraulics?
A) Protect system from excessive pressure
B) Control ram position
C) Measure flow rate
D) Adjust coolant temperature
Answer: A

252. Which sensor type is used to monitor oil temperature in forging machines?
A) RTD or thermocouple
B) Pressure sensor
C) Flow meter
D) Limit switch
Answer: A

253. What type of feedback device is used for measuring angular position of rotary forging machines?
A) Rotary encoder
B) LVDT
C) Thermocouple
D) Pressure sensor
Answer: A

254. How are forging machine control parameters typically programmed?
A) Through PLC or CNC controllers
B) Manual switches only
C) Thermostats
D) Pressure valves
Answer: A

255. What is the purpose of the forging press control interface?
A) Allow operators to set parameters and monitor process
B) Control furnace temperature
C) Measure spindle speed
D) Detect coolant leaks
Answer: A

256. Which device protects the forging machine from hydraulic fluid contamination?
A) Filters and strainers
B) Thermostats
C) Limit switches
D) Pressure relief valves
Answer: A

257. What causes hydraulic system cavitation?
A) Air bubbles or low pressure in fluid
B) Overheating
C) Excess coolant flow
D) Electrical noise
Answer: A

258. What is the primary purpose of the forging machine's return stroke control?
A) Safely retract the ram to start position
B) Increase forging force
C) Adjust spindle speed
D) Control coolant flow
Answer: A

259. Which component controls the flow direction of hydraulic oil?
A) Directional control valve
B) Pressure sensor
C) Temperature sensor
D) Flow meter
Answer: A

260. What is the main cause of forging defects?
A) Incorrect ram speed and force profile
B) Improper coolant flow
C) Electrode misalignment
D) Low spindle speed
Answer: A

261. What role does a PLC play in forging machine control?
A) Automates sequence control and interlocks
B) Measures spindle speed
C) Controls coolant flow
D) Detects ram vibration
Answer: A

262. How is system pressure measured in forging hydraulics?
A) Pressure transducers
B) Thermocouples
C) Flow meters
D) Limit switches
Answer: A

263. What is the function of a servo amplifier in forging controls?
A) Amplify control signals to servo valves
B) Measure temperature
C) Control coolant flow
D) Measure spindle speed
Answer: A

264. Why is hydraulic oil viscosity important?
A) Affects system efficiency and component wear
B) Controls spindle speed
C) Determines tool wear
D) Controls coolant temperature
Answer: A

265. What type of maintenance is critical for forging machine hydraulics?
A) Regular oil analysis and filter changes
B) Checking spindle bearings only
C) Cooling system inspection only
D) Electrical wiring checks only
Answer: A

266. How is forging machine safety ensured?
A) Emergency stops, overload sensors, and interlocks
B) Thermostats only
C) Manual supervision only
D) Pressure valves only
Answer: A

267. Which device is used to reduce pressure spikes in forging hydraulics?
A) Accumulator or shock absorber
B) Thermostat
C) Flow meter
D) Limit switch
Answer: A

268. What is the role of software in forging machine control?
A) Control sequences, monitoring, and diagnostics
B) Measure coolant flow
C) Control temperature only
D) Manual override
Answer: A

269. Which type of control loop regulates ram force?
A) Closed-loop force control
B) Open-loop control only
C) Manual control only
D) Temperature control loop
Answer: A

270. What is the typical sampling rate for forging control sensors?
A) High frequency for dynamic control (100 Hz or more)
B) Low frequency (1 Hz)
C) Once per hour
D) Manual readings only
Answer: A

271. How is data from forging machine sensors commonly used?
A) For process optimization and preventive maintenance
B) For manual inspection only
C) For cooling system adjustment only
D) For spindle speed control only
Answer: A

272. What is “ram dwell time” in forging processes?
A) Time the ram stays at maximum position under load
B) Time taken for return stroke
C) Time for spindle acceleration
D) Cooling period
Answer: A

273. How is the forging machine’s electrical system protected?
A) Circuit breakers and overload relays
B) Pressure valves
C) Thermostats
D) Flow meters
Answer: A

274. What is the effect of hydraulic leaks in forging machines?
A) Loss of pressure and efficiency
B) Increase in spindle speed
C) Cooling failure
D) Tool wear
Answer: A

275. Which device monitors oil level in the forging machine reservoir?
A) Float switch
B) Pressure sensor
C) Thermocouple
D) Flow meter
Answer: A

276. What is the purpose of interlocks in forging machine control?
A) Prevent unsafe operations
B) Measure spindle speed
C) Control coolant flow
D) Measure hydraulic temperature
Answer: A

277. How is forging cycle time controlled?
A) PLC timers and sequence control
B) Manual stopwatch
C) Thermostats
D) Pressure valves
Answer: A

278. What is the role of vibration sensors in forging machines?
A) Detect abnormal mechanical conditions
B) Measure coolant flow
C) Control spindle speed
D) Detect oil contamination
Answer: A

279. Which maintenance practice prevents forging machine downtime?
A) Predictive maintenance using sensor data
B) Random manual checks only
C) Cooling water flushing only
D) Spindle lubrication only
Answer: A

280. What is the function of a check valve in forging hydraulics?
A) Allow flow in one direction only
B) Measure flow rate
C) Control temperature
D) Act as a pressure sensor
Answer: A

281. How is forging machine noise reduced?
A) Proper hydraulic system design and maintenance
B) Increasing spindle speed
C) Reducing coolant flow
D) Manual operation only
Answer: A

282. What is the primary parameter controlled in wheel casting?
A) Molten metal temperature
B) Ram speed
C) Spindle speed
D) Electrode gap
Answer: A

283. Which sensor is commonly used to measure molten metal temperature?
A) Thermocouple
B) LVDT
C) Pressure sensor
D) Flow meter
Answer: A

284. What is the role of a mold temperature controller?
A) Maintain optimal mold temperature for solidification

B) Control ram position
C) Regulate spindle speed
D) Adjust coolant flow
Answer: A

285. Which device is used to control the pouring rate of molten metal?
A) Flow control valve
B) Pressure sensor
C) Thermostat
D) Limit switch
Answer: A

286. What type of control system is typically used for pouring rate?
A) Closed-loop control using flow feedback
B) Manual control only
C) Open-loop control without feedback
D) Temperature-based control only
Answer: A

287. How is the molten metal level monitored in the ladle?
A) Ultrasonic level sensor
B) Thermocouple
C) Pressure sensor
D) Flow meter
Answer: A

288. What is the main purpose of the casting mold?
A) Shape and solidify molten metal into wheels
B) Heat the metal
C) Measure spindle speed
D) Control electrode gap
Answer: A

289. Which safety device prevents overflow during pouring?
A) High-level alarms and interlocks
B) Thermostats
C) Limit switches only
D) Pressure relief valves
Answer: A

290. How is the cooling of the mold controlled?
A) Water flow rate controllers
B) Thermostats only
C) Manual valves only
D) Hydraulic pressure regulators
Answer: A

291. What is the function of a refractory lining in the furnace?
A) Protect furnace shell from heat and corrosion
B) Measure molten metal temperature
C) Control ram speed

D) Adjust pouring rate
Answer: A

292. Which parameter affects the quality of wheel casting most?
A) Pouring temperature and rate
B) Ram speed
C) Spindle speed
D) Electrode position
Answer: A

293. What is the purpose of a vacuum system in wheel casting?
A) Remove air and gases from the mold to reduce defects
B) Cool the molten metal
C) Control electrode gap
D) Regulate spindle speed
Answer: A

294. Which control device regulates furnace temperature?
A) PID temperature controller
B) Pressure sensor
C) Flow meter
D) Limit switch
Answer: A

295. How is the molten metal flow rate measured?
A) Using flowmeters or weight sensors
B) Using thermocouples
C) Using pressure gauges
D) Using limit switches
Answer: A

296. What type of actuator controls the pouring gate?
A) Hydraulic or electric actuators
B) Manual levers only
C) Pneumatic cylinders only
D) Temperature sensors
Answer: A

297. How is the mold vibration controlled during solidification?
A) Using vibration controllers to reduce defects
B) By adjusting spindle speed
C) By changing coolant flow
D) Manual shaking only
Answer: A

298. What is the role of the cooling water temperature sensor?
A) Ensure cooling water is at optimum temperature for mold cooling
B) Measure molten metal temperature
C) Control pouring rate
D) Detect mold defects

Answer: A

299. Which parameter is important for solidification time?
A) Mold temperature and metal composition
B) Ram speed
C) Spindle speed
D) Electrode gap
Answer: A

300. What is the typical control loop for mold temperature?
A) Feedback control with thermocouple and PID controller
B) Manual valve adjustment only
C) Open-loop control only
D) Pressure-based control
Answer: A

301. How are impurities removed from molten metal before casting?
A) Using slag skimmers and filters
B) By increasing spindle speed
C) By reducing coolant flow
D) Manual inspection only
Answer: A

302. What device detects pouring completion?
A) Level sensors or timers
B) Pressure sensors
C) Flow meters
D) Thermostats
Answer: A

303. How is mold alignment ensured?
A) Using precise mechanical guides and sensors
B) Manual alignment only
C) By adjusting spindle speed
D) By changing coolant flow
Answer: A

304. What is the function of a ladle furnace in wheel casting?
A) Maintain molten metal temperature and composition
B) Measure ram position
C) Control electrode gap
D) Regulate spindle speed
Answer: A

305. Which parameter is monitored to prevent mold cracking?
A) Mold temperature gradient
B) Spindle speed
C) Ram speed
D) Electrode gap
Answer: A

306. What is the role of interlocks in wheel casting controls?
A) Prevent unsafe pouring operations
B) Measure spindle speed
C) Control coolant flow
D) Detect hydraulic leaks
Answer: A

307. How is the furnace atmosphere controlled?
A) Using inert gases and ventilation systems
B) By adjusting spindle speed
C) By regulating coolant flow
D) Manual control only
Answer: A

308. Which device controls the speed of the pouring ladle tilting mechanism?
A) Servo motor with position feedback
B) Manual lever only
C) Thermostat
D) Pressure valve
Answer: A

309. What is the importance of pour duration?
A) Ensures complete mold filling without turbulence
B) Controls spindle speed
C) Adjusts ram position
D) Measures coolant flow
Answer: A

310. How is molten metal temperature stabilized?
A) Through controlled heating elements and feedback loops
B) By changing spindle speed
C) By manual pouring
D) By adjusting coolant flow
Answer: A

311. What type of sensor monitors mold strain during casting?
A) Strain gauge sensors
B) Thermocouples
C) Pressure sensors
D) Flow meters
Answer: A

312. How is casting quality improved through control systems?
A) By precise regulation of temperature, flow, and mold conditions
B) By increasing spindle speed
C) By reducing coolant flow
D) Manual intervention only
Answer: A

313. What causes porosity defects in wheel casting?
A) Trapped gases and improper solidification
B) Incorrect ram speed
C) Spindle misalignment
D) Low coolant flow
Answer: A

314. What is the role of a programmable logic controller (PLC) in wheel casting?
A) Automate process control and safety interlocks
B) Control spindle speed
C) Monitor coolant flow only
D) Measure hydraulic pressure only
Answer: A

315. Which parameter is critical in mold filling velocity?
A) Pouring rate
B) Ram speed
C) Spindle speed
D) Cooling water temperature
Answer: A

316. How are alarms triggered in wheel casting control systems?
A) When parameters exceed preset limits
B) Manually only
C) At fixed time intervals
D) By pressure fluctuations only
Answer: A

317. What is the effect of inadequate cooling water flow?
A) Mold overheating and casting defects
B) Ram speed fluctuation
C) Spindle speed variation
D) Electrode gap issues
Answer: A

318. How is molten metal flow stopped after pouring?
A) By closing the pouring gate using actuators
B) Manually tilting ladle back only
C) Adjusting spindle speed
D) Changing coolant flow
Answer: A

319. What device monitors the tilt angle of the pouring ladle?
A) Rotary encoder or inclinometer
B) Thermocouple
C) Pressure sensor
D) Flow meter
Answer: A

320. Which process parameter ensures uniform grain structure in cast wheels?
A) Controlled cooling rate
B) Ram speed
C) Spindle speed
D) Electrode gap
Answer: A

321. How is mold wear detected?
A) By dimensional sensors and periodic inspection
B) Thermocouples only
C) Pressure sensors only
D) Flow meters only
Answer: A

322. What is the main cause of cold shuts in wheel casting?
A) Incomplete mold filling due to low pouring temperature or rate
B) Excessive ram speed
C) Incorrect spindle speed
D) Cooling water temperature
Answer: A

323. Which instrument controls the furnace heating elements?
A) PID controller
B) Pressure sensor
C) Flow meter
D) Limit switch
Answer: A

324. How is the cleanliness of molten metal ensured?
A) Through filtration and proper ladle maintenance
B) By increasing spindle speed
C) By adjusting coolant flow
D) Manual pouring only
Answer: A

325. What is the effect of excessive pouring speed?
A) Turbulence and casting defects
B) Increased ram speed
C) Reduced spindle speed
D) Overcooling of mold
Answer: A

326. How is ladle movement synchronized with pouring controls?
A) Using coordinated PLC or CNC programming
B) Manual synchronization only
C) Thermostats only
D) Pressure valves only
Answer: A

327. What role does data logging play in wheel casting controls?
A) Process monitoring and quality analysis
B) Manual inspection only
C) Cooling control only
D) Spindle speed regulation only
Answer: A

328. Which parameter is controlled to avoid hot tears?
A) Cooling rate and mold temperature
B) Ram speed
C) Spindle speed
D) Electrode gap
Answer: A

329. What type of communication protocol is commonly used in wheel casting control systems?
A) Modbus or Profibus
B) Bluetooth only
C) Infrared only
D) Manual signals only
Answer: A

330. How is casting cycle time optimized?
A) By automating pouring, cooling, and solidification controls
B) Manual timing only
C) Increasing spindle speed
D) Reducing coolant flow
Answer: A

331. What is the benefit of integrating SCADA with wheel casting controls?
A) Real-time monitoring, control, and historical data access
B) Manual control only
C) Cooling control only
D) Spindle speed control only
Answer: A

d) HT and LT Layout of MRS

332. What does HT stand for in the context of electrical power distribution?
A) High Technology
B) High Tension
C) High Transmission
D) High Tracing

Answer: B) High Tension

333. What is the main function of the Main Receiving Station (MRS) in Rail Wheel Factory?
A) To distribute electricity to sub-stations
B) To transform high voltage to low voltage for machinery
C) To store electricity for future use
D) To monitor the power quality
Answer: A) To distribute electricity to sub-stations & B) To transform high voltage to low voltage for machinery

334. What is the typical voltage range for HT incoming feeders in a Rail Wheel Factory?
A) 110V to 230V
B) 415V to 660V
C) 11kV to 33kV
D) 400kV to 600kV
Answer: C) 11kV to 33kV

335. The high-tension side of the transformer steps down the voltage from:
A) 440V to 110V
B) 11kV/33kV to 415V/660V
C) 380V to 220V
D) 660V to 110V
Answer: B) 11kV/33kV to 415V/660V

336. What is the typical voltage for low-tension (LT) systems in industrial settings like the Rail Wheel Factory?
A) 11kV
B) 33kV
C) 415V/660V
D) 1000V
Answer: C) 415V/660V

337. Which of the following is used for switching and protecting circuits in the HT system of an MRS?
A) Circuit Breaker
B) Transformer
C) Fuse
D) Isolation switch
Answer: A) Circuit Breaker

338. What is the purpose of the step-down transformer in the MRS?
A) To convert AC to DC
B) To increase the voltage for transmission
C) To reduce the voltage to a usable level for machinery
D) To regulate the power factor

Answer: C) To reduce the voltage to a usable level for machinery

339. In an electrical distribution system, what does the 'busbar' do?
A) Directly converts electrical power
B) Provides a physical path for current flow and connects circuits
C) Protects circuits from overload
D) Stores excess power for later use

Answer: B) Provides a physical path for current flow and connects circuits

340. What protection device is commonly used to protect electrical circuits from overcurrent on the HT side?
A) Fuse
B) Overload Relay
C) Circuit Breaker
D) Earth Leakage Relay
Answer: C) Circuit Breaker

341. What is the purpose of earthing in an electrical system?
A)To prevent excessive voltage rise
B) To protect equipment from lightning
C) To ensure the safety of personnel by providing a safe path for fault current
D) To reduce power loss
Answer: C) To ensure the safety of personnel by providing a safe path for fault current

342. What is the primary function of the MCC (Motor Control Center) in a Rail Wheel Factory's electrical system?
A) To control the speed of motors
B) To monitor the voltage level
C) To distribute power to machines
D) To store electrical power
Answer: A) To control the speed of motors

343. Which of the following is essential to prevent damage to electrical equipment in the event of a fault?
A) Surge Protection
B) Switchgear
C) Transformer
D) All of the above
Answer: D) All of the above

344. The electrical system of a Rail Wheel Factory is usually grounded through:
A) A copper rod or plate in the ground
B) A resistance wire in the power line
C) A transformer connection

D) All of the above
Answer: A) A copper rod or plate in the ground

345. What is the function of a surge protector in an electrical system?
A) To store electrical power
B) To protect sensitive electrical components from voltage spikes
C) To regulate voltage
D) To increase current flow
Answer: B) To protect sensitive electrical components from voltage spikes

346. Which of the following protection devices is used to detect earth leakage faults?
A) Earth Leakage Relay (ELR)
B) Overcurrent Relay
C) Circuit Breaker
D) Fuse
Answer: A) Earth Leakage Relay (ELR)

347. Which of the following is typically used to control the voltage level in an HT distribution system?
A) Transformer
B) Breaker Panel
C) Capacitor Bank
D) Automatic Voltage Regulator (AVR)
Answer: A) Transformer

348. HT panel in an MRS usually contains:
A) Overload relays
B) Circuit breakers
C) Isolators
D) All of the above
Answer: D) All of the above

349. What kind of electrical motor is typically used in heavy machinery in a Rail Wheel Factory?
A) Induction motor
B) Synchronous motor
C) DC motor
D) Stepper motor
Answer: A) Induction motor

350. Which protection device is used to disconnect the power supply to motors in the event of an overload?
A) Circuit Breaker
B) Thermal Overload Relay
C) Surge Protector

D) Earth Fault Relay
Answer: B) Thermal Overload Relay

351. What is the primary purpose of an earth fault relay in the electrical system of a factory?
A) To regulate voltage
B) To disconnect power in case of a fault between phase and earth
C) To prevent overcurrent
D) To measure the frequency of electrical signals
Answer: B) To disconnect power in case of a fault between phase and earth

352. Which type of motor starter is used for motors requiring a high inrush current?
A) Star-Delta Starter
B) Auto Transformer Starter
C) Direct-On-Line Starter
D) A & B
Answer: D) A & B

353. What is the function of an Automatic Voltage Regulator (AVR)?
A) To maintain a constant voltage level across electrical equipment
B) To protect against short circuits
C) To convert AC to DC
D) To provide surge protection
Answer: A) To maintain a constant voltage level across electrical equipment

354. The power factor correction is typically done using:
A) Capacitor Banks
B) Transformers
C) Inductive Loads
D) Rectifiers
Answer: A) Capacitor Banks

355. What is the maximum voltage level that the LT distribution system typically handles in a Rail Wheel Factory?
A) 220V
B) 415V
C) 660V
D) 1000V
Answer: B) 415V

356. What type of earthing system is typically used in large industrial plants like Rail Wheel Factories?
A) Solid Earthing
B) Neutral Earthing
C) Grounding Through Resistance

D) Both A and B
Answer: D) Both A and B

357. What is the primary function of an isolation switch in an electrical system?
A) To measure the current
B) To connect and disconnect power circuits for maintenance
C) To control the motor speed
D) To distribute electrical power
Answer: B) To connect and disconnect power circuits for maintenance

358. Which electrical protection device would you use to protect a motor from damage due to excessive current?
A) Earth Fault Relay
B) Thermal Overload Relay
C) Circuit Breaker
D) Fuse
Answer: B) Thermal Overload Relay

359. In the context of the HT and LT systems in the MRS, what does the term 'busbar' refer to?
A) A safety relay
B) A conductor that connects different electrical circuits
C) A switchgear device
D) A type of transformer
Answer: B) A conductor that connects different electrical circuits

360. What is the most common method of power factor correction in industrial setups?
A) Using a DC generator
B) Installing capacitor banks
C) Using synchronous motors
D) All of the above
Answer: B) Installing capacitor banks

361. The protective devices in an electrical distribution system are designed to:
A) Increase the voltage
B) Prevent overheating of machinery
C) Disconnect circuits during faults
D) Increase the efficiency of transformers
Answer: C) Disconnect circuits during faults

e) <u>Single Line Diagram of Ring Main System – RWF</u>

362. What is the primary advantage of a Ring Main System in an industrial electrical distribution network?
A) Higher reliability of power supply

B) Easy installation
C) Low operational cost
D) Simple to maintain
Answer: A) Higher reliability of power supply

363. In a Ring Main System, what happens if one part of the ring is disconnected?
A) The power supply to the entire system is lost
B) The system continues to operate through the other path of the ring
C) Power is transferred to backup sources
D) Only the connected portion of the system loses power
Answer: B) The system continues to operate through the other path of the ring

364. Which of the following is a key feature of the Ring Main System?
A) It has no redundancy
B) It has multiple paths for power supply
C) It uses only one supply source
D) It requires only manual switching
Answer: B) It has multiple paths for power supply

365. The Ring Main System is typically used for:
A) Low voltage distribution only
B) High voltage transmission
C) Industrial power distribution
D) Power generation
Answer: C) Industrial power distribution

366. Which of the following components is used to isolate sections of the Ring Main System for maintenance?
A) Busbars
B) Circuit breakers
C) Fuses
D) Isolators
Answer: D) Isolators

367. In a Ring Main System, what is the role of the automatic changeover switch?
A) To connect the ring to the power grid
B) To ensure that power is supplied from an alternative path in case of failure
C) To control the voltage
D) To monitor the current flow
Answer: B) To ensure that power is supplied from an alternative path in case of failure

368. What type of protection is usually used in the Ring Main System to prevent overloads?
A) Earth leakage relay
B) Overcurrent protection relay

C) Differential protection relay
D) Under-voltage relay
Answer: B) Overcurrent protection relay

369. Which of the following is a common application of the Ring Main System in an industrial setting?
A) Emergency power supply
B) Uninterruptible power supply (UPS) systems
C) High-precision manufacturing equipment
D) General industrial electrical distribution
Answer: D) General industrial electrical distribution

370. How does the Ring Main System maintain continuous power supply even during faults?
A) By switching to a backup generator
B) By using parallel paths for power distribution
C) By reducing the load on the system
D) By increasing the voltage levels
Answer: B) By using parallel paths for power distribution

371. What is the primary function of circuit breakers in a Ring Main System?
A) To regulate voltage
B) To disconnect faulty sections
C) To provide power to all sections
D) To monitor the temperature
Answer: B) To disconnect faulty sections

372. In a typical Ring Main System, where is the main transformer usually located?
A) At the starting point of the ring
B) In the middle of the ring
C) At the end of the ring
D) At any point along the ring, depending on the design
Answer: A) At the starting point of the ring

373. In the Ring Main System, how is load sharing typically handled between parallel circuits?
A) Manual switching
B) Automatic load balancing
C) Overload detection
D) By using transformers
Answer: B) Automatic load balancing

374. Which of the following ensures that the electrical system is always balanced in a Ring Main configuration?
A) Voltage regulators

B) Circuit breakers
C) Transformers
D) Proper load distribution
Answer: D) Proper load distribution

375. What is the role of busbars in a Ring Main System?
A) To provide a path for current from multiple sources to load
B) To isolate faulty circuits
C) To measure power consumption
D) To reduce energy loss
Answer: A) To provide a path for current from multiple sources to load

376. What is one of the most common faults that the Ring Main System is designed to handle?
A) Short-circuit faults
B) Transformer failure
C) Voltage surge
D) Overload conditions
Answer: A) Short-circuit faults

377. What kind of protection system is used to detect faults in a Ring Main System before they cause significant damage?
A) Overcurrent protection
B) Differential protection
C) Short-circuit protection
D) All of the above
Answer: D) All of the above

378. In a Ring Main System, what type of relay is used to detect faults between phases?
A) Overload relay
B) Earth fault relay
C) Differential protection relay
D) Phase-failure relay
Answer: C) Differential protection relay

379. What would happen if an overcurrent condition occurs in a Ring Main System without proper protection?
A) The circuit would continue to operate normally
B) The system would trip automatically to avoid damage
C) The power supply would shut down for all connected loads
D) The load would automatically reduce
Answer: B) The system would trip automatically to avoid damage

380. In the event of a fault, which device is typically responsible for isolating the faulty section in a Ring Main System?
A) Load Break Switch
B) Overcurrent Relay
C) Circuit Breaker
D) Voltage Transformer
Answer: C) Circuit Breaker

381. What is a key feature of Ring Main Units (RMU) in the Ring Main System?
A) They control the entire factory's power distribution
B) They provide automatic fault isolation
C) They reduce the need for circuit breakers
D) They act as transformers
Answer: B) They provide automatic fault isolation

382. Which of the following is essential for maintaining the safety and reliability of a Ring Main System?
A) Regular maintenance and testing
B) Overloading of the system
C) Increasing the system's voltage
D) Ensuring that the system is under-loaded
Answer: A) Regular maintenance and testing

383. What is the benefit of having a Ring Main System in terms of fault tolerance?
A) It reduces the total cost of installation
B) It allows for simultaneous power supply to all sections
C) It ensures that the system remains operational even if one path is faulty
D) It allows only one path for power distribution
Answer: C) It ensures that the system remains operational even if one path is faulty

384. What is the standard protection device used in Ring Main Systems for detecting earth faults?
A) Earth Fault Relay
B) Current Transformer
C) Fuse
D) Surge Protector
Answer: A) Earth Fault Relay

385. In an industrial environment, the Ring Main System is designed to be:
A) Single-path
B) Dual-path for redundancy
C) Manual switching only
D) Non-interruptible
Answer: B) Dual-path for redundancy

386. Which of the following is the best practice for improving the reliability of the Ring Main System?
A) Limit the number of branches in the ring
B) Use manual switches for maintenance
C) Ensure automatic load balancing and fault detection
D) Increase the load on the system to maximize efficiency
Answer: C) Ensure automatic load balancing and fault detection

387. The main disadvantage of a Ring Main System is:
A) High operational cost
B) Difficulty in fault isolation
C) Complexity in design and installation
D) Increased downtime in case of fault
Answer: C) Complexity in design and installation

388. What is the purpose of fuses in a Ring Main System?
A) To increase power supply reliability
B) To protect the system from overcurrent and short-circuit faults
C) To provide energy savings
D) To monitor the power quality
Answer: B) To protect the system from overcurrent and short-circuit faults

389. In the Ring Main System, if one section of the ring is disconnected, what happens?
A) The entire system shuts down
B) The rest of the ring continues to function normally through an alternate path
C) The power supply switches to backup generators
D) Only the disconnected section loses power
Answer: B) The rest of the ring continues to function normally through an alternate path

390. The main advantage of automatic changeover switches in a Ring Main System is:
A) Preventing voltage fluctuations
B) Ensuring continuous power supply during faults
C) Monitoring current levels
D) Reducing power consumption
Answer: B) Ensuring continuous power supply during faults

391. Which protection device in the Ring Main System is used to monitor and disconnect faulty sections due to overload?
A) Earth Fault Relay
B) Overload Relay
C) Differential Relay
D) Voltage Regulator
Answer: B) Overload Relay

f) <u>Protection and controls used for DG Set</u>

392. What is the primary purpose of a Diesel Generator (DG) set in a Rail Wheel Factory (RWF)?
A) To power the factory's lighting system
B) To provide emergency backup power during grid failure
C) To reduce energy consumption
D) To cool down electrical equipment
Answer: B) To provide emergency backup power during grid failure

393. Which protection device is commonly used to prevent overcurrent in the DG set circuit?
A) Earth Fault Relay
B) Overcurrent Relay
C) Differential Protection Relay
D) Under-voltage Relay
Answer: B) Overcurrent Relay

394. What is the function of the overload relay in a DG set?
A) To regulate the voltage
B) To protect the generator from exceeding safe operating current limits
C) To detect low fuel levels
D) To control the engine speed
Answer: B) To protect the generator from exceeding safe operating current limit

395. Which device is used for controlling the voltage output of a DG set?
A) Voltage Regulator
B) Earth Fault Relay
C) Overcurrent Relay
D) Surge Protector
Answer: A) Voltage Regulator

396. What is the purpose of a coolant temperature sensor in a DG set?
A)To monitor the fuel efficiency
B) To prevent overheating by monitoring the engine coolant temperature
C) To ensure smooth engine operation
D) To regulate engine speed
Answer: B) To prevent overheating by monitoring the engine coolant temperature

397. Which of the following is typically used to protect a DG set from short circuits?
A) Earth Fault Relay
B) Circuit Breaker
C) Differential Protection
D) Isolation Transformer

Answer: B) Circuit Breaker

398. What is the purpose of a speed governor in a DG set?
A) To maintain the engine speed at a constant level under varying load conditions
B) To regulate the fuel flow to the engine
C) To reduce emissions
D) To monitor the exhaust gas temperature
Answer: A) To maintain the engine speed at a constant level under varying load conditions

399. In a DG set, automatic voltage regulation (AVR) helps to:
A) Automatically start the engine
B) Regulate the generator's output voltage
C) Control the fuel injectors
D) Increase the engine power
Answer: B) Regulate the generator's output voltage

400. What protection is typically used in DG sets to prevent overvoltage?
A) Overcurrent Relay
B) Overvoltage Relay
C) Under-voltage Relay
D) Low Power Factor Relay
Answer: B) Overvoltage Relay

401. Which type of control system is commonly used to start and stop a DG set automatically based on power failure?
A) Manual Control System
B) Automatic Transfer Switch (ATS)
C) PLC-based control system
D) Local On/Off Switch
Answer: B) Automatic Transfer Switch (ATS)

402. What is the role of the Automatic Transfer Switch (ATS) in DG set operation?
A) To maintain constant power output
B) To automatically switch between mains and DG set power during a power failure
C) To control the fuel intake to the DG set
D) To monitor exhaust emissions
Answer: B) To automatically switch between mains and DG set power during a power failure

403. What is the function of a fuel level sensor in a DG set?
A) To monitor fuel consumption
B) To measure the fuel temperature
C) To alert operators when the fuel tank is running low
D) To control the fuel injection timing

Answer: C) To alert operators when the fuel tank is running low

404. Which protection device is used to prevent low oil pressure in a DG set?
A) Low Oil Pressure Switch
B) Overcurrent Relay
C) Voltage Regulator
D) High Temperature Shutdown
Answer: A) Low Oil Pressure Switch

405. What type of protection is used to prevent overheating of the DG engine?
A) High Temperature Shutdown
B) Voltage Regulator
C) Load Shedding
D) Overvoltage Relay
Answer: A) High Temperature Shutdown

406. Which type of control system is responsible for regulating the speed of a DG engine?
A) Fuel Flow Control
B) Load Control System
C) Speed Governor
D) Voltage Regulation Control
Answer: C) Speed Governor

407. In the context of a DG set, what does the term "load sharing" refer to?
A) Balancing the load between the generator and the utility supply
B) Distributing the power equally across multiple generators
C) The process of controlling fuel consumption
D) The regulation of the engine's cooling system
Answer: B) Distributing the power equally across multiple generators

408. Which protection device is used to detect a phase failure in a DG set?
A) Phase Failure Relay
B) Overload Relay
C) Low Voltage Relay
D) Earth Fault Relay
Answer: A) Phase Failure Relay

409. What is the function of a battery charger in a DG set?
A) To charge the battery that powers the DG set's starting system
B) To provide power to the control system
C) To ensure voltage regulation
D) To monitor the fuel level in the tank
Answer: A) To charge the battery that powers the DG set's starting system

410. Which relay is used for earth fault protection in DG sets?
A) Earth Fault Relay
B) Overcurrent Relay
C) Phase Sequence Relay
D) Differential Protection Relay
Answer: A) Earth Fault Relay

411. What is the key function of a cooling fan in a DG set?
A) To increase fuel efficiency
B) To cool the engine and prevent overheating
C) To monitor the exhaust gases
D) To supply air for combustion
Answer: B) To cool the engine and prevent overheating

412. What type of protection would be used in a DG set to prevent dry running of the engine?
A) Low fuel level alarm
B) Low water level protection
C) Low oil pressure switch
D) Both B and C
Answer: D) Both B and C

413. What is typically used to monitor the exhaust temperature of a DG set?
A) Exhaust Gas Temperature Sensor
B) Oil Pressure Switch
C) Speed Governor
D) Load Controller
Answer: A) Exhaust Gas Temperature Sensor

414. In a DG set, automatic shutdown is triggered in case of:
A) Low voltage output
B) High temperature or low oil pressure
C) Overload condition
D)All of the above
Answer: D) All of the above

415. What is the main purpose of Differential Protection in DG sets?
A) To protect the engine from high temperatures
B) To detect faults between phases or between phase and ground
C) To maintain engine speed
D) To regulate voltage output
Answer: B) To detect faults between phases or between phase and ground

416. What kind of system is used for remote monitoring and control of DG sets?
A) PLC-based control system
B) Manual control system
C) SCADA system
D) Direct voltage control system
Answer: C) SCADA system

417. Which of the following is NOT a feature of the Automatic Transfer Switch (ATS)?
A) Automatic switching between DG set and utility supply
B) Protection against electrical faults
C) Control over the voltage regulation of the DG set
D) Manual operation only
Answer: D) Manual operation only

418. Which device is used to monitor the fuel consumption of a DG set?
A) Fuel Gauge
B) Load Bank
C) Fuel Flow Meter
D) Fuel Pressure Switch
Answer: C) Fuel Flow Meter

419. Which of the following is part of the generator protection system for detecting faults?
A) Generator Excitation System
B) Generator Protection Relay
C) Fuel Injection System
D) Alternator Controller
Answer: B) Generator Protection Relay

420. What type of protection device is used to prevent reverse power flow in DG sets?
A) Reverse Power Relay
B) Earth Fault Relay
C) Overcurrent Relay
D) Under-frequency Relay
Answer: A) Reverse Power Relay

421. Which of the following is used for fuel system control in a DG set?

A) Fuel Injection Pump
B) Fuel Pressure Regulator
C) Diesel Tank Valve
D) All of the above
Answer: D) All of the above

422. Which is not a common maintenance hazard with cranes
A) Damage to wire rope
B) Alignment Issues
C) Bent/ damaged hooks
D) Chipped Paint
Ans: D

423. An overhead crane that consist of parallel runways with a travelling bridge is known as
A) Road mobile Crane
B) Monorail Crane
C) Bridge crane
D) Jib crane
Ans: C

424. Type of crane where a horizontal beam extends to lift and move a load along the beam is known as
A) Gantry Crane
B) Monorail Crane
C) Bridge crane
D) Jib crane
Ans: D

425. A crane that is shut down for various reasons should be
A) Sold out
B) Kept Open
C) Locked out and tagged out
D) Painted black
Ans: C

426. Preventive maintenance is
A) Maintenance carried out before an issue is identified
B) Maintenance carried out after an issue is identified
C) Maintenance carried out after an accident
D) None of the above
Ans: A

427. What is full form of L.T pertaining to EOT cranes?
A) Limited travel
B) Longitudinal travel
C) Long travel
D) Lengthy travel
Ans: B

428. What is full form of C.T pertaining to EOT cranes?
A) Complete travel
B) Common travel
C) Cross travel
D) Close travel
Ans: C

429. What is the full form of M.H pertaining to EOT cranes?
A) Material Handling
B) Mini Hoist
C) Main Hoist
D) Main Handle
Ans: C

430. What is full form of A.H pertaining to EOT cranes?
A) Additional Handle
B) Auxiliary Hoist
C) Additional Hoist
D) None of the above
Ans: B

431. Hand signal during operations are used when
A) the operator ia deaf
B) voice communications can not be heard
C) rigger ia dumb
D) none of the above
Ans: B

432. ____ is used to douze general fire
A) Fire extinguisher
B) Life guard
C) Alcohol
D) Air blowing
Ans: A

433. Crane driver should accept emergency stop from
A) Only rigger engaged with his crane
B) all riggers at site
C) anybody working at site
D) Only his supervisor
Ans: C

434. At a time crane driver should accept signals from
A) Only rigger engaged with his crane
B) all riggers at site
C) anybody working at site

D) Only his supervisor
Ans: A

435. Total number of EOT cranes in the Axle Forge shop is
A) 2
B) 4
C) 5
D) 3
Ans: C

436. Total number of EOT cranes in the Axle machine shop is
A) 2
B) 4
C) 3
D) 5
Ans: B

437. Total number of EOT cranes in the Axle Assembly Bay is
A) 1
B) 2
C) 3
D) 4
Ans: D

438. Total number of EOT cranes in the Wheelset loading Bay is
A) 2
B) 3
C) 4
D) 5
Ans: B

439. Total number of EOT cranes in the SPC Bay is
A) 2
B) 3
C) 4
D) 5
Ans: C

440. Axle Shop Control is carrying out the electrical maintenance activities of ____ number of cranes in RWF
A) 13
B) 16
C) 20
D) 21
Ans: C

441. 10 Ton capacity crane is used in which area of the Axle shop?
A) Forge Shop
B) Machine Shop
C) Assembly Shop
D) None of the above
Ans: B

442. All the Assembly shop cranes are of
A) 10T
B) 5T
C) 15T
D) 3T
Ans: B

443. Capacity of Axle forge shop cranes is
A) 5T
B) 10T
C) 15T
D) 20T
Ans: C

444. Maximum used Auxiliary hoist capacity of EOT cranes in Axle shop is
A) 2T
B) 3T
C) 5T
D) None of the above
Ans: D

445. The safety devices of EOT cranes include
A) Anti Collision device
B) Rotary switches
C) Over travel switches
D) All of these
Ans: D

446. How many corner switches will be there in an EOT crane in general
A) 1
B) 2
C) 4
D) 3
Ans: C

447. If any of the corner switch is operated, then _____
A) LT operation will be stopped
B) CT operation will be stopped
C) Hoist operation will be stopped

D) All operations of the crane will be stopped
Ans: D

448. The saftey device which is used to limit the upward movement of the hoist operation is
A) Rotary switch
B) Gravity swich
C) All of the above
D) None of the above
Ans: C

449. When the gravity switch is operated
A) Hoist operation will be stopped
B) All operations will be stopped
C) LT operation will be stopped
D) None of the above
Ans: B

450. Which of the following act as a secondary safety device
A) Gravity switch
B) Rotary switch
C) Over travel switches
D) Corner switches
Ans: A

451. All the safety devices of the EOT cranes are controlled by
A) Protective panel
B) Auxiliary Hoist panel
C) Main Hoist panel
D) Rectifier panel
Ans: A

452. Rectangular magnet is used in
A) Axle forge shop
B) Machine shop
C) Assembly shop
D) None of these
Ans: A

453. The capacity of rectangular magnets in the axle forge shop is
A) 1kw
B) 2kw
C) 3kw
D) 5kw
Ans: B

454. Capacity of circular magnets in the SPC bay is
A) 15kw
B) 18.5kw
C) 20kw
D) 22.5kw
Ans: B

455. Circular magnets are used for
A) Lifting hot axles from the furnace discharge area
B) Loading and unloading of blooms
C) Both A and B
D) Lifting of Scraps
Ans: D

456. Rectangular magnets are used for
A) Lifting hot axles from the furnace discharge area
B) Loading and unloading of blooms
C) Both A and B
D) Lifting of Scraps
Ans: C

457. Capacity of battery bank in the Forge shop cranes are
A) 110V
B) 220V
C) 400V
D) None of the above
Ans: A

458. Capacity of battery bank in the SPC bay cranes are
A) 110V
B) 220V
C) 400V
D) None of the above
Ans: B

459. Periodical maintenance of EOT cranes are carried out
A) monthly
B) quarterly
C) half yearly
D) All of the above
Ans: D

460. Recommended duty cycle of motors used in the EOT cranes are
A) S1
B) S4
C) Any of these

D) None of these
Ans: B

461. How many LT motors are there in each 15/2 T cranes of Axle shop?
A) 1
B) 2
C) 3
D) 4
Ans: D

462. 41. How many LT motors are there in the 5T EOT cranes of Axle shop?
A) 1
B) 2
C) 3
D) 4
Ans: B

463. What is the capacity of LT motors in the Forge shop EOT cranes?
A) 5.5 kw
B) 9.3kw
C) 7.5kw
D) 15kw
Ans: B

464. What is the capacity of CT motors in the Forge shop EOT cranes?
A) 5.5kw
B) 9.3kw
C) 7.5kw
D) 15kw
Ans: A

465. What is the full form of DSL in EOT cranes
A) Duct system line
B) Down supply lead
C) Digital subscriber line
D) Direct supply line
Ans: B

466. Type of motor starter used in the EOT cranes is
A) DOL
B) Star delta
C) VFD
D) None of the above
Ans: VFD

467. Full form of DBR in EOT cranes
A) Dynamic braking recorder
B) Drive braking resistance
C) Diminishing brake resistance
D) None of the above
Ans: B

468. Panel used for charging of batteries of EOT crane is known as
A) Magnet panel
B) Hoist panel
C) Rectifier panel
D) Protective panel
Ans: C

469. Full form of VFD is
A) Voltage Frequency drive
B) Variable frequency drive
C) Variable fraction drive
D) Voltage fixed drive
Ans: B

470. Which of the following is a beat practice for operating a crane?
A) Conducting a pre shift inspection
B) Speeding up operations to save time
C) Ignoring hand signals if they seem unclear
D) Operating the crane at the maximum capacity for efficiency
Ans: A

471. Supply to the break thrusters of an EOT crane is
A) 415 VAC
B) 220VAC
C) 110VAC
D) 110VDC
Ans: A

g) <u>Isolators, Circuit Breakers & Switchgear – Operation & Maintenance</u>

472. An isolator is designed to operate under:
A. Load conditions
B. No-load conditions
C. Fault conditions
D. High frequency
Answer: B. No-load conditions

473.Purpose of an isolator in a substation is to:
A. Break fault current
B. Interrupt load
C. Ensure safe disconnection for maintenance
D. Improve power factor
Answer: C. Ensure safe disconnection for maintenance

474. Which type of isolator is commonly used in substations?
A. Vertical break
B. Horizontal break
C. Pantograph
D. All of the above
Answer: D. All of the above

475. Isolators must be interlocked with:
A. Earth switch
B. Circuit breaker
C. Voltage transformer
D. CTs
Answer: B. Circuit breaker

476. Maintenance of isolators includes checking for:
A. Insulation resistance
B. Mechanical alignment
C. Contact condition
D. All of the above
Answer: D. All of the above

477. A circuit breaker is used to:
A. Provide continuous power
B. Break load and fault current
C. Measure current
D. Regulate voltage
Answer: B. Break load and fault current

478. Which of the following is a common type of circuit breaker?
A. Air blast
B. SF_6 gas
C. Vacuum
D. All of the above

Answer: D. All of the above

479. Vacuum circuit breakers are preferred in:
A. EHV substations
B. Low voltage circuits
C. Medium voltage networks
D. DC circuits
Answer: C. Medium voltage networks

480. Arc quenching in SF_6 circuit breakers is achieved by:
A. Cooling
B. Ion recombination
C. Oil blast
D. Compressed air
Answer: B. Ion recombination

481. Main contacts in a circuit breaker must withstand:
A. Light loads
B. Arc current
C. Insulation leakage
D. Thermal overload only
Answer: B. Arc current

482. Which protection is provided by a circuit breaker?
A. Earth fault
B. Overcurrent
C. Short circuit
D. All of the above
Answer: D. All of the above

483. Relay associated with circuit breakers detects:
A. Gas leakage
B. Arc length
C. Faults and initiates tripping
D. Power factor
Answer: C. Faults and initiates tripping

484. Breaker failure protection ensures:
A. Primary tripping
B. Secondary tripping if breaker fails

C. Lockout of relay
D. Alarm generation
Answer: B. Secondary tripping if breaker fails

485. Auto-reclosing is applicable to:
A. Isolators
B. Load break switches
C. Circuit breakers
D. Fuses
Answer: C. Circuit breakers

486. Which auxiliary system is critical for circuit breaker operation?
A. Cooling fans
B. DC trip supply
C. Surge capacitors
D. Lighting system
Answer: B. DC trip supply

487. Routine maintenance of circuit breakers includes:
A. Contact resistance measurement
B. SF_6 gas pressure check
C. Insulation resistance test
D. All of the above
Answer: D. All of the above

488. Timing test in circuit breaker maintenance is used to:
A. Measure operating speed
B. Detect oil impurities
C. Check voltage drop
D. Balance current
Answer: A. Measure operating speed

489. What is a typical trip time of a circuit breaker?
A. 0.1 sec
B. 1–3 sec
C. 0.02–0.1 sec
D. 5 sec
Answer: C. 0.02–0.1 sec

490. Contact resistance in a breaker should be:
A. High
B. Zero
C. Within specified low range
D. Equal to insulation resistance
Answer: C. Within specified low range

491. Which test is done for vacuum integrity in vacuum circuit breakers?
A. DGA test
B. Vacuum bottle test
C. Contact resistance test
D. IR test
Answer: B. Vacuum bottle test

492. Switchgear includes:
A. Circuit breakers
B. Disconnectors
C. Protection relays
D. All of the above
Answer: D. All of the above

493. Metal-clad switchgear means:
A. Metal enclosure
B. Separate compartments for each function
C. Fixed insulation
D. Air insulation
Answer: B. Separate compartments for each function

494. Indoor switchgear is generally:
A. Oil type
B. Air insulated
C. SF_6 gas insulated
D. Both B and C
Answer: D. Both B and C

495. Gas-insulated switchgear (GIS) is preferred for:
A. Compact substations
B. Outdoor only
C. Large rural substations
D. Low voltage

Answer: A. Compact substations

496. Load break switches are designed to:
A. Break fault current
B. Operate under no load
C. Interrupt normal load current safely
D. Detect harmonics
Answer: C. Interrupt normal load current safely

498. Arc interruption medium in air circuit breaker is:
A. SF_6
B. Oil
C. Air
D. Vacuum
Answer: C. Air

499. Oil circuit breakers use oil for:
A. Cooling
B. Arc quenching and insulation
C. Current conduction
D. Alarm indication
Answer: B. Arc quenching and insulation

500. Major disadvantage of oil circuit breakers:
A. High cost
B. Risk of fire and maintenance need
C. Low breaking capacity
D. Poor insulation
Answer: B. Risk of fire and maintenance need

501. Main feature of vacuum circuit breakers:
A. Arc travels in vacuum
B. Low maintenance
C. Compact
D. All of the above
Answer: D. All of the above

502. Which circuit breaker is best suited for urban indoor substations?
A. Air blast
B. Vacuum

C. Oil
D. Air insulated
Answer: B. Vacuum

503. Primary injection test checks:
A. Relay wiring
B. Overall trip functionality
C. Oil level
D. SF_6 pressure
Answer: B. Overall trip functionality

504. IR (Insulation Resistance) test is done using:
A. Ammeter
B. Megger
C. Multimeter
D. LCR meter
Answer: B. Megger

505. Breaker contact wear is typically indicated by:
A. Excessive noise
B. Carbon deposits
C. Increased contact resistance
D. All of the above
Answer: D. All of the above

506. SF_6 gas leakage test is done using:
A. Multimeter
B. Leak detector sensor
C. IR thermometer
D. Water bath
Answer: B. Leak detector sensor

507. Trip coil testing ensures:
A. Relay pickup
B. Breaker response to trip command
C. Load flow control
D. Fuse status
Answer: B. Breaker response to trip command

508. Before maintenance, the circuit breaker must be:
A. Grounded and isolated
B. Heated
C. Shorted
D. Operated once
Answer: A. Grounded and isolated

509. High arc temperature during interruption can reach:
A. 200°C
B. 1,500°C
C. 6,000–10,000°C
D. 500°C
Answer: C. 6,000–10,000°C

510. IEC standard for high-voltage breakers:
A. IEC 61850
B. IEC 60298
C. IEC 62271
D. IEC 60947
Answer: C. IEC 62271

511. OSHA safety lockout for switchgear means:
A. Isolating main cable
B. Physically locking circuit breaker in OFF position
C. Grounding transformer
D. Discharging capacitor
Answer: B. Physically locking circuit breaker in OFF position

512. A breaker should not be closed if:
A. Trip coil is healthy
B. Gas pressure is low
C. Remote signal is active
D. Relay is bypassed
Answer: B. Gas pressure is low

513. Digital switchgear integrates:
A. IEDs (Intelligent Electronic Devices)
B. Manual operation only
C. Only CTs
D. Only SF_6 insulation

Answer: A. IEDs (Intelligent Electronic Devices)

514. Intelligent switchgear allows:
A. Predictive maintenance
B. Manual tripping
C. No control
D. Power factor measurement
Answer: A. Predictive maintenance

515. Breaker tripping can be caused by:
A. Overload
B. Earth fault
C. Differential protection
D. All of the above
Answer: D. All of the above

516. Capacitive voltage divider in switchgear is used for:
A. Current sensing
B. Voltage measurement
C. Temperature sensing
D. Load control
Answer: B. Voltage measurement

517. Synchro-check relay prevents:
A. Breaker closing under out-of-sync conditions
B. Arc faults
C. Short circuit
D. Overvoltage
Answer: A. Breaker closing under out-of-sync conditions

518. Minimum oil CBs use:
A. Entire tank full of oil
B. Oil around arc only
C. No oil
D. Oil under pressure
Answer: B. Oil around arc only

519. Auto-reclosing is common in:
A. Transmission line breakers
B. Distribution fuse cut-outs

C. Transformers
D. Switchboards
Answer: A. Transmission line breakers

520. Busbar protection is typically of type:
A. Overcurrent
B. Distance
C. Differential
D. Impedance
Answer: C. Differential

521. Operating mechanism of circuit breaker includes:
A. Spring
B. Hydraulic
C. Pneumatic
D. All of the above
Answer: D. All of the above

522. Main criteria for breaker selection include:
A. Voltage and current rating
B. Fault level
C. Duty cycle
D. All of the above
Answer: D. All of the above

h) ELECTRICAL SYSTEMS AND COMPONENTS

523. The insulating material for a cable should have
A. low cost
B. high dielectric strength
C. high mechanical strength
D. all of the above
Answer: D

524. Which of the following protects a cable against mechanical injury ?
A. Bedding
B. Sheath
C. Armouring
D. None of the above
Answer: C

525. Which of the following insulation is used in cables ?
A. Varnished cambric

B. Rubber
C. Paper
D. All of the above

Answer: D

526. Empire tape is

A. varnished cambric
B. vulcanised rubber
C. impregnated paper
D. none of the above

Answer: A

527. The thickness of the layer of insulation on the conductor, in cables, depends upon

A. reactive power
B. power factor
C. voltage
D. current carrying capacity

Answer: C

528. The bedding on a cable consists of

A. hessian cloth
B. jute
C. All of the above
D. none of the above

Answer: C

529. The insulating material for cables should

A. be acid proof
B. be non-inflammable
C. be non-hygroscopic
D. have all above properties

Answer: D

530. In a cable immediately above metallic sheath _____ is provided.

A. earthing connection
B. bedding
C. armouring
D. none of the above

Answer: B

531. The current carrying capacity of cables in D.C. is more than that in A.C. mainly due to

A. absence of harmonics
B. non-existence of any stability limit
C. smaller dielectric loss
D. absence of ripples

Answer: C

532. In case of three core flexible cable the colour of the neutral is

A. blue
B. black
C. brown
D. none of the above

Answer: A

533. cables are used for 132 kV lines.

A. High tension
B. Super tension
C. Extra high tension
D. Extra super voltage

Answer: D

534. Conduit pipes are normally used to protect _____ cables.

A. unsheathed cables
B. armoured
C. PVC sheathed cables
D. all of the above

Answer: A

535. The minimum dielectric stress in a cable is at

A. armour
B. bedding
C. conductor surface
D. lead sheath

Answer: D

536. In single core cables armouring is not done to

A. avoid excessive sheath losses
B. make it flexible
C. either of the above
D. none of the above

Answer: A

537. Dielectric strength of rubber is around

A. 5 kV/mm
B. 15 kV/mm
C. 30 kV/mm
D. 200 kV/mm

Answer: C

538. Low tension cables are generally used up to

A. 200 V

B. 500 V
C. 700 V
D. 1000 V

Answer: D

539. In a cable, the maximum stress under operating conditions is at

A. insulation layer
B. sheath
C. armour
D. conductor surface

Answer: D

540. High tension cables are generally used up to

A. 11kV
B. 33kV
C. 66 kV
D. 132 kV

Answer: A

541. The surge resistance of cable is

A. 5 ohms
B. 20 ohms
C. 50 ohms
D. 100 ohms

Answer: C

542. PVC stands for

A. polyvinyl chloride
B. post varnish conductor
C. pressed and varnished cloth
D. positive voltage conductor

Answer: A

543. In the cables, the location of fault is usually found out by comparing

A. the resistance of the conductor
B. the inductance of conductors
C. the capacitances of insulated conductors
D. all above parameters

Answer: C

544. In capacitance grading of cables we use a _____ dielectric.

A. composite
B. porous
C. homogeneous
D. hygroscopic

Answer: A

545. Pressure cables are generally not used beyond

A. 11 kV
B. 33 kV
C. 66 kV
D. 132 kV

Answer: C

546. The material for armouring on cable is usually

A. steel tape
B. galvanised steel wire
C. any of the above
D. none of the above

Answer: C

547. Cables, generally used beyond 66 kV are

A. oil filled
B. S.L. type
C. belted
D. armoured

Answer: A

548. The relative permittivity of rubber is

A. between 2 and 3
B. between 5 and 6
C. between 8 and 10
D. between 12 and 14

Answer: A

549. Solid type cables are considered unreliable beyond 66 kV because

A. insulation may melt due to higher temperature
B. skin effect dominates on the conductor
C. of corona loss between conductor and sheath material
D. there is a danger of breakdown of insulation due to the presence of voids

Answer: D

550. If the length of a cable is doubled, its capacitance

A. becomes one-fourth
B. becomes one-half
C. becomes double
D. remains unchanged

Answer: C

551. In cables the charging current

A. lags the voltage by 90°
B. leads the voltage by 90°
C. lags the voltage by 180°
D. leads the voltage by 180°

Answer: B

552. A certain cable has an insulation of relative permittivity 4. If the insulation is replaced by one of relative permittivity 2, the capacitance of the cable will become

A. one half
B. double
C. four times
D. none of the above

Answer: A

553. If a cable of homogeneous insulation has a maximum stress of 10 kV/mm, then the dielectric strength of insulation should be

A. 5 kV/mm
B. 10 kV/mm
A. 15 kV/mm
D. 30 kV/mm

Answer: B

554. In the cables, sheaths are used to

A. prevent the moisture from entering the cable
B. provide enough strength
C. provide proper insulation
D. none of the above

Answer: A

555. The inter sheaths in the cables are used to

A. minimize the stress
B. avoid the requirement of good insulation
C. provide proper stress distribution
D. none of the above

Answer: C

556. The electrostatic stress in underground cables is

A. same at the conductor and the sheath
B. minimum at the conductor and maximum at the sheath
C. maximum at the conductor and minimum at the sheath
D. zero at the conductor as well as on the sheath

Answer: C

557. The breakdown of insulation of the cable can be avoided economically by the use of

A. inter-sheaths

B. insulating materials with different dielectric constants
C. both A. and B.
D. none of the above

Answer: C

558. The insulation of the cable decreases with

A. the increase in length of the insulation
B. the decrease in the length of the insulation
C. either A. or B.
D. none of the above

Answer: A

559. A cable carrying alternating current has

A. hysteresis losses only
B. hysteresis and leakage losses only
C. hysteresis, leakage and copper losses only
D. hysteresis, leakage, copper and friction losses

Answer: B

560. In a cable the voltage stress is maximum at

A. sheath
B. insulator
C. surface of the conductor
D. core of the conductor

Answer: D

561. Capacitance grading of cable implies

A. use of dielectrics of different permeabilities
B. grading according to capacitance of cables per km length
C. cables using single dielectric in different concentrations
D. capacitance required to be introduced at different lengths to counter the effect of inductance

Answer: A

562. Underground cables are laid at sufficient depth

A. to minimise temperature stresses
B. to avoid being unearthed easily due to removal of soil
C. to minimise the effect of shocks and vibrations due to gassing vehicles, etc.
D. for all of the above reasons

Answer: C

563. The advantage of cables over overhead transmission lines is

A. easy maintenance
B. low cost
C. can be used in congested areas
D. can be used in high voltage circuits

Answer: C

564. The thickness of metallic shielding on cables is usually

A. 0.04 mm
B. 0.2 to 0.4 mm
C. 3 to 5 mm
D. 40 to 60 mm

Answer: A

565. Cables for 220 kV lines are invariably

A. mica insulated
B. paper insulated
C. compressed oil or compressed gas insulated
D. rubber insulated

Answer: C

566. Is a cable is to be designed for use on 1000 kV, which insulation would you prefer ?

A. Polyvinyle chloride
B. Vulcanised rubber
C. Impregnated paper
D. Compressed SFe gas

Answer: D

567. If a power cable and a communication cable are to run parallel the minimum distance between the two, to avoid interference, should be

A. 2 cm
B. 10 cm
C. 50 cm
D. 400 cm

Answer: C

568. Copper as conductor for cables is used as

A. annealed
B. hardened and tempered
C. hard drawn
D. alloy with chromium

Answer: A

569. The insulating material should have

A. low permittivity
B. high resistivity
C. high dielectric strength
D. all of the above

Answer: D

570. The advantage of oil filled cables is

A. more perfect impregnation
B. smaller overall size
C. no ionisation, oxidation and formation of voids
D. all of the above

Answer: D

571. The disadvantage with paper as insulating material is

A. it is hygroscopic
B. it has high capacitance
C. it is an organic material
D. none of the above

Answer: A

572. The breakdown voltage of a cable depends on

A. presence of moisture
B. working temperature
C. time of application of the voltage
D. all of the above

Answer: D

573. Which of the following does not change in a transformer ?

(a) Current
(b) Voltage
(c) Frequency
(d) All of the above

Answer: c

574. In a transformer the energy is conveyed from primary to secondary

(a) through cooling coil
(b) through air
(c) by the flux
(d) none of the above

Answer: c

575. A transformer core is laminated to

(a) reduce hysteresis loss
(b) reduce eddy current losses
(c) reduce copper losses
(d) reduce all above losses

Answer: b

576. The degree of mechanical vibrations produced by the laminations of a transformer depends on

(a) tightness of clamping
(b) gauge of laminations

(c) size of laminations
(d) all of the above

Answer: d

577. The no-load current drawn by transformer is usually what per cent of the full-load current ?

(a) 0.2 to 0.5 per cent
(b) 2 to 5 per cent
(c) 12 to 15 per cent
(d) 20 to 30 per cent

Answer: b

578. The path of a magnetic flux in a transformer should have

(a) high resistance
(b) high reluctance
(c) low resistance
(d) low reluctance

Answer: d

579. No-load on a transformer is carried out to determine

(a) copper loss
(b) magnetising current
(c) magnetising current and loss
(d) efficiency of the transformer

Answer: c

580. The dielectric strength of transformer oil is expected to be

(a) lkV
(b) 33 kV
(c) 100 kV
(d) 330 kV

Answer: b

581. Sumpner's test is conducted on trans-formers to determine

(a) temperature
(b) stray losses
(c) all-day efficiency
(d) none of the above

Answer: a

582. The permissible flux density in case of cold rolled grain oriented steel is around

(a) 1.7 Wb/m2
(b) 2.7 Wb/m2
(c) 3.7 Wb/m2
(d) 4.7 Wb/m2

Answer: a

583. The efficiency of a transformer will be maximum when

(a) copper losses = hysteresis losses
(b) hysteresis losses = eddy current losses
(c) eddy current losses = copper losses
(d) copper losses = iron losses

Answer: d

584. No-load current in a transformer

(a) lags behind the voltage by about 75°
(b) leads the voltage by about 75°
(c) lags behind the voltage by about 15°
(d) leads the voltage by about 15°

Answer: a

585. The purpose of providing an iron core in a transformer is to

(a) provide support to windings
(b) reduce hysteresis loss
(c) decrease the reluctance of the magnetic path
(d) reduce eddy current losses

Answer: c

586. Which of the following is not a part of transformer installation ?

(a) Conservator
(b) Breather
(c) Buchholz relay
(d) Exciter

Answer: d

587. While conducting short-circuit test on a transformer the following side is short circuited

(a) High voltage side
(b) Low voltage side
(c) Primary side
(d) Secondary side

Answer: b

588. In the transformer following winding has got more cross-sectional area

(a) Low voltage winding
(b) High voltage winding
(c) Primary winding
(d) Secondary winding

Answer: a

589. A transformer transforms

(a) voltage
(b) current
(c) power
(d) frequency

Answer: c

590. A transformer cannot raise or lower the voltage of a D.C. supply because

(a) there is no need to change the D.C. voltage
(b) a D.C. circuit has more losses
(c) Faraday's laws of electromagnetic induction are not valid since the rate of change of flux is zero
(d) none of the above

Answer: c

591. Primary winding of a transformer

(a) is always a low voltage winding
(b) is always a high voltage winding
(c) could either be a low voltage or high voltage winding
(d) none of the above

Answer: c

592. 20. Which winding in a transformer has more number of turns ?

(a) Low voltage winding
(b) High voltage winding
(c) Primary winding
(d) Secondary winding

Answer: b

593. Efficiency of a power transformer is of the order of

(a) 100 per cent
(b) 98 per cent
(c) 50 per cent
(d) 25 per cent

Answer: b

594. In a given transformer for given applied voltage, losses which remain constant irrespective of load changes are

(a) friction and windage losses
(b) copper losses
(c) hysteresis and eddy current losses
(d) none of the above

Answer: c

595. A common method of cooling a power transformer is

(a) natural air cooling

(b) air blast cooling
(c) oil cooling
(d) any of the above

Answer: c

596. The no load current in a transformer lags behind the applied voltage by an angle of about

(a) 180°
(b) 120″
(c) 90°
(d) 75°

Answer: d

597. In a transformer routine efficiency depends upon

(a) supply frequency
(b) load current
(c) power factor of load
(d) both (b) and (c)

Answer: d

598. In the transformer the function of a conservator is to

(a) provide fresh air for cooling the transformer
(b) supply cooling oil to transformer in time of need
(c) protect the transformer from damage when oil expends due to heating
(d) none of the above

Answer: c

599. Natural oil cooling is used for transformers up to a rating of

(a) 3000 kVA
(b) 1000 kVA
(c) 500 kVA
(d) 250 kVA

Answer: a

600. Power transformers are designed to have maximum efficiency at

(a) nearly full load
(b) 70% full load
(c) 50% full load
(d) no load

Answer: a

601. The maximum efficiency of a distribution transformer is

(a) at no load
(b) at 50% full load
(c) at 80% full load
(d) at full load

Answer: b

602. Transformer breaths in when

(a) load on it increases
(b) load on it decreases
(c) load remains constant
(d) none of the above

Answer: b

603. No-load current of a transformer has

(a) has high magnitude and low power factor
(b) has high magnitude and high power factor
(c) has small magnitude and high power factor
(d) has small magnitude and low power factor

Answer: d

604. Spacers are provided between adjacent coils

(a) to provide free passage to the cooling oil
(b) to insulate the coils from each other
(c) both (a) and (b)
(d) none of the above

Answer: a

605. Greater the secondary leakage flux

(a) less will be the secondary induced e.m.f.
(b) less will be the primary induced e.m.f.
(c) less will be the primary terminal voltage
(d) none of the above

Answer: a

606. The purpose of providing iron core in a step-up transformer is

(a) to provide coupling between primary and secondary
(b) to increase the magnitude of mutual flux
(c) to decrease the magnitude of mag-netizing current
(d) to provide all above features

Answer: c

607. The power transformer is a constant

(a) voltage device
(b) current device
(c) power device
(d) main flux device

Answer: d

608. Two transformers operating in parallel will share the load depending upon their

(a) leakage reactance
(b) per unit impedance
(c) efficiencies
(d) ratings

Answer: b

609. If R2 is the resistance of secondary winding of the transformer and K is the transformation ratio then the equivalent secondary resistance referred to primary will be

(a) R2/VK
(b) R2IK2
(c) R22!K2
(d) R22/K

Answer: b

610. What will happen if the transformers working in parallel are not connected with regard to polarity ?

(a) The power factor of the two trans-formers will be different from the power factor of common load
(b) Incorrect polarity will result in dead short circuit
(c) The transformers will not share load in proportion to their kVA ratings
(d) none of the above

Answer: b

611. If the percentage impedances of the two transformers working in parallel are different, then

(a) transformers will be overheated
(b) power factors of both the transformers will be same
(c) parallel operation will be not possible
(d) parallel operation will still be possible, but the power factors at which the two transformers operate will be different from the power factor of the common load

Answer: d

612. In a transformer the tappings are generally provided on

(a) primary side
(b) secondary side
(c) low voltage side
(d) high voltage side

Answer: c

613. The use of higher flux density in the transformer design

(a) reduces weight per kVA
(6) reduces iron losses
(c) reduces copper losses
(d) increases part load efficiency

Answer: a

614. The chemical used in breather for transformer should have the quality of

(a) ionizing air
(b) absorbing moisture
(c) cleansing the transformer oil
(d) cooling the transformer oil.

Answer: b

615. The chemical used in breather is

(a) asbestos fiber
(b) silica sand
(c) sodium chloride
(d) silica gel

Answer: d

616. An ideal transformer has infinite values of primary and secondary inductances. The statement is

(a) true
(b) false

Answer: b

617. The transformer ratings are usually expressed in terms of

(a) volts
(b) amperes
(c) kW
(d) kVA

Answer: d

618. The noise resulting from vibrations of laminations set by magnetic forces, is termed as

(a) magnetostriction
(b) boo
(c) hum
(d) zoom

Answer: c

619. Hysteresis loss in a transformer varies as CBmax = maximum flux density)

(a) Bmax
(b) Bmax1-6
(C) Bmax1-83
(d) B max

Answer: b

620. Material used for construction of transformer core is usually

(a) wood

(b) copper
(c) aluminium
(d) silicon steel

Answer: d

621. The thickness of laminations used in a transformer is usually

(a) 0.4 mm to 0.5 mm
(b) 4 mm to 5 mm
(c) 14 mm to 15 mm
(d) 25 mm to 40 mm

Answer: a

622. The function of conservator in a transformer is

(a) to protect against internal fault
(b) to reduce copper as well as core losses
(c) to cool the transformer oil
(d) to take care of the expansion and contraction of transformer oil due to variation of temperature of sur-roundings

Answer: d

623. The highest voltage for transmitting electrical power in India is

(a) 33 kV.
(6) 66 kV
(c) 132 kV
(d) 400 kV

Answer: d

624. In a transformer the resistance between its primary and secondary is

(a) zero
(b) 1 ohm
(c) 1000 ohms
(d) infinite

Answer: d

625. A transformer oil must be free from

(a) sludge
(b) odour
(c) gases
(d) moisture

Answer: d

626. A Buchholz relay can be installed on

(a) auto-transformers
(b) air-cooled transformers
(c) welding transformers
(d) oil cooled transformers

Answer: d

627. Gas is usually not liberated due to dissociation of transformer oil unless the oil temperature exceeds

(a) 50°C
(b) 80°C
(c) 100°C
(d) 150°C

Answer: d

628. The main reason for generation of harmonics in a transformer could be

(a) fluctuating load
(b) poor insulation
(c) mechanical vibrations
(d) saturation of core

Answer: d

629. Distribution transformers are generally designed for maximum efficiency around

(a) 90% load
(b) zero load
(c) 25% load
(d) 50% load

Answer: d

630. Which of the following property is not necessarily desirable in the material for transformer core ?

(a) Mechanical strength
(6) Low hysteresis loss
(c) High thermal conductivity
(d) High permeability

Answer: c

631. Star/star transformers work satisfactorily when

(a) load is unbalanced only
(b) load is balanced only
(c) on balanced as well as unbalanced loads
(d) none of the above

Answer: b

632. Delta/star transformer works satisfactorily when

(a) load is balanced only
(b) load is unbalanced only
(c) on balanced as well as unbalanced loads
(d) none of the above

Answer: c

633. Buchholz's relay gives warning and protection against

(a) electrical fault inside the transformer itself
(b) electrical fault outside the transformer in outgoing feeder
(c) for both outside and inside faults
(d) none of the above

Answer: a

634. The magnetising current of a transformer is usually small because it has

(a) small air gap
(b) large leakage flux
(c) laminated silicon steel core
(d) fewer rotating parts

Answer: a

635. Which of the following does not change in an ordinary transformer ?

(a) Frequency
(b) Voltage
(c) Current
(d) Any of the above

Answer: a

636. Which of the following properties is not necessarily desirable for the material for the transformer core ?

(a) Low hysteresis loss
(b) High permeability
(c) High thermal conductivity
(d) Adequate mechanical strength

Answer: c

637. The leakage flux in a transformer depends upon

(a) load current
(b) load current and voltage
(c) load current, voltage and frequency
(d) load current, voltage, frequency and power factor

Answer: a

638. The path of the magnetic flux in transformer should have

(a) high reluctance
(b) low reactance
(c) high resistance
(d) low resistance

Answer: b

639. Noise level test in a transformer is a

(a) special test
(b) routine test

(c) type test
(d) none of the above

Answer: c

640. Which of the following is not a routine test on transformers ?

(a) Core insulation voltage test
(b) Impedance test
(c) Radio interference test
(d) Polarity test

Answer: c

641. A transformer can have zero voltage regulation at

(a) leading power factor
(b) lagging power factor
(c) unity power factor
(d) zero power factor

Answer: a

642. Helical coils can be used on

(a) low voltage side of high kVA transformers
(b) high frequency transformers
(c) high voltage side of small capacity transformers
(d) high voltage side of high kVA rating transformers

Answer: a

643. Harmonics in transformer result in

(a) increased core losses
(b) increased I2R losses
(c) magnetic interference with communication circuits
(d) all of the above

Answer: d

644. The core used in high frequency transformer is usually

(a) copper core
(b) cost iron core
(c) air core
(d) mild steel core

Answer: c

645. The full-load copper loss of a transformer is 1600 W. At half-load, the copper loss will be

(a) 6400 W
(b) 1600 W
(c) 800 W
(d) 400 W

Answer: d

646. The value of flux involved the e.m.f. equation of a transformer is

(a) average value
(b) r.m.s. value
(c) maximum value
(d) instantaneous value

Answer: c

647. Silicon steel used in laminations mainly reduces

(a) hysteresis loss
(b) eddy current losses
(c) copper losses
(d) all of the above

Answer: a

648. Which winding of the transformer has less cross-sectional area ?

(a) Primary winding
(b) Secondary winding
(c) Low voltage winding
(d) High voltage winding

Answer: d

649. Power transformers are generally designed to have maximum efficiency around

(a) no-load
(b) half-load
(c) near full-load
(d) 10% overload

Answer: c

650. Which of the following is the main advantage of an auto-transformer over a two winding transformer ?

(a) Hysteresis losses are reduced
(b) Saving in winding material
(c) Copper losses are negligible
(d) Eddy losses are totally eliminated

Answer: b

651. During short circuit test iron losses are negligible because

(a) the current on secondary side is negligible
(b) the voltage on secondary side does not vary
(c) the voltage applied on primary side is low
(d) full-load current is not supplied to the transformer

Answer: c

652. Two transformers are connected in parallel. These transformers do not have equal percentage impedance. This is likely to result in

(a) short-circuiting of the secondaries

(b) power factor of one of the transformers is leading while that of the other lagging

(c) transformers having higher copper losses will have negligible core losses

(d) loading of the transformers not in proportion to their kVA ratings

Answer: d

653. The changes in volume of transformer cooling oil due to variation of atmospheric temperature during day and

night is taken care of by which part of transformer

(a) Conservator

(b) Breather

(c) Bushings

(d) Buchholz relay

Answer: a

654. An ideal transformer is one which has

(a) no losses and magnetic leakage

(b) interleaved primary and secondary windings

(c) a common core for its primary and secondary windings

(d) core of stainless steel and winding of pure copper metal

Answer: a

655. When a given transformer is run at its rated voltage but reduced frequency, its

(a) flux density remains unaffected

(b) iron losses are reduced

(c) core flux density is reduced

(d) core flux density is increased

Answer: d

656. In an actual transformer the iron loss remains practically constant from noload to full load because

(a) value of transformation ratio remains constant

(b) permeability of transformer core remains constant

(c) core flux remains practically constant

(d) primary voltage remains constant

Answer: c

657. An ideal transformer will have maximum efficiency at a load such that

(a) copper loss = iron loss

(b) copper loss < iron loss

(c) copper loss > iron loss

(d) none of the above

Answer: a

658. If the supply frequency to the transformer is increased,"the iron loss will

(a) not change
(b) decrease
(c) increase
(d) any of the above

Answer: c

659. Negative voltage regulation is indicative that the load is

(a) capacitive only
(b) inductive only
(c) inductive or resistive
(d) none of the above

Answer: a

660. Iron loss of a transformer can be measured by

(a) low power factor wattmeter
(b) unity power factor wattmeter
(c) frequency meter
(d) any type of wattmeter

Answer: a

661. When secondary of a current transformer is open-circuited its iron core will be

(a) hot because of heavy iron losses taking place in it due to high flux density
(b) hot because primary will carry heavy current
(c) cool as there is no secondary current
(d) none of above will happen

Answer: a

662. The transformer laminations are insulated from each other by

(a) mica strip
(b) thin coat of varnish
(c) paper
(d) any of the above

Answer: b

663. Which type of winding is used in a 3 phase shell-type transformer ?

(a) Circular type
(b) Sandwich type
(c) Cylindrical type
(d) Rectangular type

Answer: b

664. During open circuit test of a transformer

(a) primary is supplied rated voltage

(b) primary is supplied full-load current
(c) primary is supplied current at reduced voltage
(d) primary is supplied rated kVA

Answer: a

665. Open circuit test on transformers is conducted to determine

(a) hysteresis losses
(b) copper losses
(c) core losses
(d) eddy current losses

Answer: c

666. Short circuit test on transformers is conducted to determine

(a) hysteresis losses
(b) copper losses
(c) core losses
(d) eddy current losses

Answer: b

667. For the parallel operation of single phase transformers it is necessary that they should have

(a) same efficiency
(b) same polarity
(c) same kVA rating
(d) same number of turns on the secondary side.

Answer: b

668. The transformer oil should have _____ volatility and _____ viscosity.

(a) low,low
(b) high,high
(c) low,high
(d) high,low

Answer: a

669. The function of breather in a transformer is

(a) to provide oxygen inside the tank
(b) to cool the coils during reduced load
(c) to cool the transformer oil
(d) to arrest flow of moisture when outside air enters the transformer

Answer: d

670. The secondary winding of which of the following transformers is always kept closed ?

(a) Step-up transformer
(b) Step-down transformer
(c) Potential transformer

(d) Current transformer

Answer: d

671. The size of a transformer core will depend on

(a) frequency
(b) area of the core
(c) flux density of the core material
(d) (a) and (b) both

Answer: d

672. Natural air coo ling is generally restricted for transformers up to

(a) 1.5 MVA
(b) 5 MVA
(c) 15 MVA
(d) 50 MVA

Answer: a

673. A shell-type transformer has

(a) high eddy current losses
(b) reduced magnetic leakage
(c) negligibly hysteresis losses
(d) none of the above

Answer: b

674. A transformer can have regulation closer to zero

(a) on full-load
(b) on overload
(c) on leading power factor
(d) on zero power factor

Answer: c

675. A transformer transforms

(a) voltage
(b) current
(c) current and voltage
(d) power

Answer: d

676. Which of the following is not the standard voltage for power supply in India ?

(a) llkV
(b) 33kV
(c) 66 kV
(d) 122 kV

Answer: d

677. Reduction in core losses and increase in permeability are obtained with transformer employing
(a) core built-up of laminations of cold rolled grain oriented steel
(b) core built-up of laminations of hot rolled sheet
(c) either of the above
(d) none of the above
Answer: a

678. In a power or distribution transformer about 10 per cent end turns are heavily insulated
(a) to withstand the high voltage drop due to line surge produced by the shunting capacitance of the end turns
(b) to absorb the line surge voltage and save the winding of transformer from damage
(c) to reflect the line surge and save the winding of a transformer from damage
(d) none of the above
Answer: a

679. For given applied voltage, with the increase in frequency of the applied voltage
(a) eddy current loss will decrease
(b) eddy current loss will increase
(c) eddy current loss will remain unchanged
(d) none of the above
Answer: c

680. Losses which occur in rotating electric machines and do not occur in trans formers are
(a) friction and windage losses
(b) magnetic losses
(c) hysteresis and eddy current losses
(d) copper losses
Answer: a

681. In a given transformer for a given applied voltage, losses which remain constant irrespective of load changes are
(a) hysteresis and eddy current losses
(b) friction and windage losses
(c) copper losses
(d) none of the above
Answer: a

682. Which of the following statements regarding an ideal single-phase transformer having a turn ratio of 1 : 2 and drawing a current of 10 A from 200 V A.C. supply is incorrect ?
(a) Its secondary current is 5 A
(b) Its secondary voltage is 400 V
(c) Its rating is 2 kVA

(d) Its secondary current is 20 A
(e) It is a step-up transformer
Answer: d

683. The secondary of a current transformer is always short-circuited under operating conditions because it
(a) avoids core saturation and high voltage induction
(b) is safe to human beings
(c) protects the primary circuit
(d) none of the above
Answer: a

684. In a transformer the resistance between its primary and secondary should be
(a) zero
(b) 10 Q
(c) 1000 Q
(d) infinity
Answer: d

685. A good voltage regulation of a transformer means
(a) output voltage fluctuation from no load to full load is least
(b) output voltage fluctuation with power factor is least
(c) difference between primary and secondary voltage is least
(d) difference between primary and secondary voltage is maximum
Answer: a

686. For a transformer, operating at constant load current, maximum efficiency will occur at
(a) 0.8 leading power factor
(b) 0.8 lagging power factor
(c) zero power factor
(d) unity power factor
Answer: d

687. Which of the following protection is normally not provided on small distribution transformers ?
(a) Overfluxing protection
(b) Buchholz relay
(c) Overcurrent protection
(d) All of the above
Answer: b

688. Which of the following acts as a protection against high voltage surges due to lightning and switching ?
(a) Horn gaps
(b) Thermal overload relays

(c) Breather
(d) Conservator
Answer: a

689. The efficiency of two identical transformers under load conditions can be determined by
(a) short-circuit test
(b) back-to-back test
(c) open circuit test
(d) any of the above
Answer: b

690. Which of the following insulating materials can withstand the highest temperature safely ?
(a) Cellulose
(b) Asbestos
(c) Mica
(d) Glass fibre
Answer: c

691. Which of the following parts of a transformer is visible from outside ?
(a) Bushings
(b) Core
(c) Primary winding
(d) Secondary winding
Answer: a

692. The noise produced by a transformer is termed as
(a) zoom
(b) hum
(c) ringing
(d) buzz
Answer: b

693. Which of the following loss in a transformer is zero even at full load ?
(a) Core loss
(b) Friction loss
(c) Eddy current loss
(d) Hysteresis loss
Answer: b

694. Which of the following is the most likely source of harmonics in a transformer ?
(a) poor insulation
(b) Overload
(c) loose connections
(d) Core saturation

Answer: d

695. If a transformer is continuously operated the maximum temperature rise will occur in
(a) core
(b) windings
(c) tank
(d) any of the above
Answer: b

696. The hum in a transformer is mainly attributed to
(a) load changes
(b) oil in the transformer
(c) magnetostriction
(d) mechanical vibrations
Answer: c

697. The maximum load that a power transformer can carry is limited by its
(a) temperature rise
(b) dielectric strength of oil
(c) voltage ratio
(d) copper loss
Answer: c

698. The efficiency of a transformer, under heavy loads, is comparatively low because
(a) copper loss becomes high in proportion to the output
(b) iron loss is increased considerably
(c) voltage drop both in primary and secondary becomes large
(d) secondary output is much less as compared to primary input
Answer: a

699. An open-circuit test on a transformer is conducted primarily to measure
(a) insulation resistance
(b) copper loss
(c) core loss
(d) total loss
(e) efficiency
(f) none of the above
Answer: c

700. A no-load test is performed on a transformer to determine
(a) core loss
(b) copper loss
(c) efficiency
(d) magnetising current
(e) magnetising current and loss

Ans: e

701. The voltage transformation ratio of a transformer is equal to the ratio of
(a) primary turns to secondary turns
(b) secondary current to primary current
(c) secondary induced e.m.f. to primary induced e.m.f.
(d) secondary terminal voltage to primary applied voltage
Answer: c

702. Part of the transformer which is most subject to damage from overheating is
(a) iron core
(b) copper winding
(c) winding insulation
(d) frame or case
(e) transformer tank
Answer: c

703. If a transformer is switched on to a voltage more than the rated voltage
(a) its power factor will deteriorate
(b) its power factor will increase
(c) its power factor will remain unaffected
(d) its power factor will be zero
Answer: a

704. Auto-transformer makes effective saving on copper and copper losses, when its transformation ratio is
(a) approximately equal to one
(b) less than one
(c) great than one
(d) none of the above
Answer: a

705. Minimum voltage regulation occurs when the power factor of the load is
(a) unity
(b) lagging
(c) leading
(d) zero
Answer: c

706. In a step-down transformer, there is a change of 15 A in the load current. This results in change of supply current of
(a) less than 15 A
(b) more than 15 A
(c) 15 A
(d) none of the above

Answer: a

707. The efficiencies of transformers compared with that of electric motors of the same power are

(a) about the same
(6) much smaller
(c) much higher
(d) somewhat smaller
(e) none of the above
Answer: c

708. The main function of a fuse is to

(a) protect the line
(b) open the circuit
(c) protect the appliance
(d) prevent excessive currents

Ans: d

709. On which of the following routine tests are conducted ?

(a) Oil circuit breakers
(b) Air blast circuit breakers
(c) Minimum oil circuit breakers
(d) All of the above

Ans: d

710. SF6 gas

(a) is yellow in colour
(b) is lighter than air
(c) is nontoxic
(d) has pungent small

Ans: c

711. The arcing contacts in a circuit breaker are made of

(a) copper tungsten alloy
(b) porcelain
(c) electrolytic copper
(d) aluminium alloy

Ans: a

712. Which of the following mediums is employed for extinction of arc in air circuit breaker ?

(a) Water
(b) Oil
(c) Air
(d) SF6

Ans: c

713. With which of the following, a circuit breaker must be equipped for remote operation ?

(a) Inverse time trip
(b) Time-delay trip
(c) Shunt trip
(d) None of the above

Ans: c

714. Fault diverters are basically

(a) fuses
(b) relays
(c) fast switches
(d) circuit breakers

Ans: c

715. A thermal protection switch can protect against

(a) short-circuit
(b) temperature
(c) overload
(d) over voltage

Ans: c

716. Arc in a circuit behaves as

(a) a capackive reactance
(b) an inductive reactance
(c) a resistance increasing with voltage rise across the arc
(d) a resistance decreasing with voltage rise across the arc

Ans: d

717. Thermal circuit breaker has

(a) delayed trip action
(b) instantaneous trip action
(c) both of the above
(d) none of the above

Ans: a

718. Relays can be designed to respond to changes in

(a) resistance, reactance or impedance
(b) voltage and current
(c) temperature
(d) all above

Ans: d

719. Overload relays are of…… type.

(a) induction
(b) thermal
(c) electromagnetic
(d) all above

Ans: d

720. Thermal overload relays are used to protect the motor against over current due to

(a) short-circuits
(b) heavy loads
(c) grounds
(d) all of the above

Ans: b

721. Magnetic circuit breaker has _____ trip action.

(a) delayed
(b) instantaneous
(c) both of the above
(d) none of the above

Ans: b

722. D.C. shunt relays are made of

(a) few turns of thin wire
(b) few turns of thick wire
(c) many turns of thin wire
(d) many turns of thick wire

Ans: c

723. The relay operating speed depends upon

(a) the spring tension
(b) the rate of flux built up
(c) armature core air gap
(d) all of the above

Ans: d

724. In order that current should flow without causing excessive heating or voltage drop, the relay contacts should

(a) have low contact resistance
(b) be clean and smooth
(c) be of sufficient size and proper shape
(d) have all above properties

Ans: d

725. Circuit breakers usually operate under

(a) transient state of short-circuit current
(b) sub-transient state of short-circuit current

(c) steady state of short-circuit current
(d) after D.C. component has ceased

Ans: a

726. Circuit breakers are essentially

(a) current carrying contacts called electrodes
(b) arc extinguishers
(c) circuits to break the system
(d) transformers to isolate the two systems

Ans: a

727. The current zero interruption, in oil and air blast circuit breakers, is achieved by

(a) lengthening of the gap
(b) cooling and blast effect
(c) both (a) and (b)
(d) deionizing the oil with forced air

Ans: c

728. Air blast circuit breaker is used for

(a) over currents
(b) short duty
(c) intermittent duty
(d) repeated duty

Ans: d

729. An efficient and a well designed protective relaying should have

(a) good selectivity and reliability
(b) economy and simplicity
(c) high speed and selectivity
(d) all of the above

Ans: d

730. Burden of a protective relay is the power

(a) required to operate the circuit breaker
(b) absorbed by the circuit of relay
(c) developed by the relay circuit
(d) none of the above

Ans: b

731. Directional relays are based on flow of

(a) power
(b) current
(c) voltage wave
(d) all of the above

Ans:

732. A differential relay measures the vector difference between

(a) two currents
(b) two voltages
(c) two or more similar electrical quantities
(d) none of the above

Ans: c

733. A transmission line is protected by

(a) inrush protection
(b) distance protection
(c) time graded and current graded over current protection
(d) both (b) and (c)

Ans: d

734. Large internal faults are protected by

(a) merz price percentage differential protection
(b) mho and ohm relays
(c) horn gaps and temperature relays
(d) earth fault and positive sequence relays

Ans: a

735. When a transmission line is energized, the wave that propagates on it is

(a) current wave only
(b) voltage wave only
(c) both (a) and (b)
(d) power factor wave only

Ans: c

736. Protective relays are devices that detect abnormal conditions in electrical circuits by measuring

(a) current during abnormal condition
(b) voltage during abnormal condition
(c) constantly the electrical quantities which differ during normal and abnormal conditions
(d) none of the above

Ans: c

737. The voltage appearing across the contacts after opening of the circuit breaker is called_____voltage.

(a) recovery
(b) surge
(c) operating
(d) arc

Ans: a

738. Ionization in circuit breaker is facilitated by

(a) high temperature
(b) increase of mean free path
(c) increasing field strength
(d) all of the above

Ans: d

739. In a circuit breaker the basic problem is to

(a) maintain the arc
(b) extinguish the arc
(c) transmit large power
(d) emit the ionizing electrons

Ans: c

740. Overheating of relay contacts or contact born out is due to

(a) slow making and breaking of load circuit contacts
(b) foreign matter on the contact surface
(c) too low contact pressure
(d) all of the above

Ans: d

741. Interruption of large currents by relay requires

(a) arc suppressing blow out coils
(b) wide separation of the opened contacts
(c) high speed opening of contacts
(d) all of the above

Ans: d

742. Shunt capacitance is neglected while considering

(a) short transmission line
(b) medium transmission line
(c) long transmission line
(d) medium and long transmission lines

Ans: a

743. The arc voltage produced in A.C. circuit breaker is always

(a) in phase with the arc current
(b) lagging the arc current by 90″
(c) leading the arc current by 90°
(d) none of the above

Ans: a

744. The time of closing the cycle, in modern circuit breakers is

(a) 0.003 sec
(b) 0.001 sec
(c) 0.01 sec

(d) 0.10 sec

Ans: a

745. Insulation resistance of high voltage circuit breakers is more than

(a) 1 mega ohms
(b) 10 mega ohms
(c) 100 mega ohms
(d) 500 mega ohms

Ans: c

746. H.R.C. fuses provide best protection against

(a) overload
(b) reverse current
(c) open-circuits
(d) short-circuits

Ans: d

747. The ground wire should not be smaller than No _____ copper.

(a) 2
(b) 4
(c) 6
(d) 10

Ans: d

748. The delay fuses are used for the protection of _____ .

(a) motors
(b) power outlet circuits
(c) fluorescent lamps
(d) light circuits

Ans: a

749. Which of the following is the least expensive protection for overcurrent is low voltage system ?

(a) Rewireable fuse
(b) Isolator
(c) Oil circuit breaker
(d) Air break circuit breaker

Ans: a

750. Resistance grounding is used for voltage between

(a) 33kV to 66kV
(b) 11kV to 33kV
(c) 3.3kV and kV
(d) none of the above

Ans: c

751. The contacts of high voltage switches used in power system are submerged in oil. The main purpose of the oil is to

(a) lubricate the contacts
(b) insulate the contacts from switch body
(c) extinguish the arc
(d) all of the above

Ans: c

752. To protect most of the electrical equipment handling low power, the types of relays used are

(a) thermocouple
(b) electronic and bimetallic
(c) both (a) and (b)
(d) none of the above

Ans: c

753. Wave trap is used to trap waves of

(a) power frequencies
(b) higher frequencies entering generator or transformer units
(c) either of the above
(d) none of the above

Ans: b

754. Ungrounded neutral transmission system is not recommended because of system

(a) insulation being overstressed due to over voltages
(b) insulation overstress may lead to failure and subsequent phase to phase faults
(c) being inadequately protected against ground fault
(d) all of the above

Ans: d

755. The reflection coefficient at the open circuited end of a transmission line.

(a) zero
(b) infinity
(c) unity
(d) none of the above

Ans: c

756. For the protection of power station buildings against direct strokes the requirements are

(a) interception
(b) interception and conduction
(c) interception, conduction and dissipation
(d) interception, conduction, dissipation and reflection

Ans: c

757. The line insulation is the insulation level of the station equipment.

(a) less than
(b) more than
(c) proportional to
(d) not directly related with

Ans: d

758. 52. The interaction between a transmission line and communication line is minimized by

(a) transposing transmission as well as communication lines
(b) increasing the height of the trans-mission line tower
(c) increasing the distance between the two lines
(d) all of the above

Ans: d

759. When a wave propagates on a transmission line, it suffers reflection several times at

(a) tapping
(b) load end
(c) sending end
(d) sending and other end

Ans: d

760. Which of the following statements is incorrect?

(a) Station batteries are used to operate relay only
(b) The lightning arresters are basically surge diverters
(c) An impedance relay has maximum fault current when fault occurs near the relay
(d) A high speed relay has an operation of 1 to 2 cycles

Ans: a

761. Discrimination between main and back up protection is provided by the use of relays which are

(a) fact
(b) sensitive
(c) slow
(d) none of the above

Ans: c

762. Induction cup relay is operated due to changes in

(a) current
(b) voltage
(c) impedance
(d) all of the above

Ans: d

763. A.C. network analyser is used to solve problems of

(a) load flow

(b) load flow and short-circuit
(c) load flow and stability
(d) load flow, short-circuit and stability

Ans: d

764. Which of the following statements is incorrect ?

(a) Lightning arrestors are used before the switchgear
(b) Shunt reactors are used as compensation reactors
(c) The peak short current is (1.8 xV2) times the A.C. component
(d) The MVA at fault is equal to base MVA divided by per unit equivalent fault reactance

Ans: a

765. Short-circuit currents are due to

(a) single phase to ground faults
(b) phase to phase faults
(c) two phase to ground faults
(d) any of these

Ans: d

766. To reduce short circuit fault currents are used.

(a) reactors
(b) resistors
(c) capacitors
(d) none of the above

Ans: a

767. Bus coupler is very essential in arrangement

(a) single bus
(b) double bus, double breaker
(c) main and transfer bus
(d) all of the above

Ans: c

768. For cost and safety, the outdoor substations are installed for voltages above

(a) 11 kV
(b) 33 kV
(c) 60kV
(d) 110kV

Ans: b

769. The short circuit in any winding of the transformer is the result of

(a) mechanical vibration
(b) insulation failure
(c) loose connection
(d) impulse voltage

Ans: d

770. relays are used for phase faults on long line.

(a) Impedance
(b) Reactance
(c) Either of the above
(d) None of the above

Ans: a

771. For which of the following protection from negative sequence currents is provided ?

(a) Generators
(b) Motors
(c) Transmission line
(d) Transformers

Ans: a

772. relay is preferred for phase fault on short transmission line.

(a) Induction type
(b) Reactance
(c) Impedance
(d) None of the above

Ans: b

773. Distance relays are generally

(a) split-phase relays
(b) reactance relays
(c) impedance relays
(d) none of the above

Ans: d

774. For which of the following ratings of the transformer differential protection is recommended ?

(a) above 30 kVA.
(b) equal to and above 5 MVA
(c) equal to and above 25 MVA
(d) none of the above

Ans: b

775. A _____ is used to measure the stator % winding temperature of the generator.

(a) thermocouple
(b) pyrometer
(c) resistance thermometer
(d) thermometer

Ans: c

776. The under voltage relay can be used for

(a) generators
(b) busbars
(c) transformers
(d) all of the above

Ans: d

777. The relay with inverse time characteristic will operate within

(a) 1.5 sec
(b) 5 to 10 sec
(c) 5 to 20 sec
(d) 20 to 30 sec

Ans: b

778. The single phasing relays are used for the protection of

(a) single phase motors only
(b) two phase motors only
(c) two single phase motors running in parallel
(d) three phase motors

Ans: d

779. Which of the following devices will receive voltage surge first travelling on the transmission line ?

(a) Lightning arresters
(b) Relays
(c) Step-down transformer
(d) Switchgear

Ans: a

780. Which of the following parameter can be neglected for a short line ?

(a) Inductance
(b) Capacitance
(c) Resistance
(d) Reactance

Ans: b

781. Series reactors should have

(a) low resistance
(b) high resistance
(c) low impedance
(d) high impedance

Ans: a

782. Which of the following circuit breakers has high reliability and minimum maintenance ?

(a) Air blast circuit breakers

(b) Circuit breaker with SF6 gas
(c) Vacuum circuit breakers
(d) Oil circuit breakers

Ans: b

783. Arc in a circuit breaker is interrupted at

(a) zero current
(b) maximum current
(c) minimum voltage
(d) maximum voltage

Ans: a

784. transmission line has reflection coefficient as one.

(a) Open circuit
(b) Short-circuit
(c) Long
(d) None of the above

Ans: a

785. What will be the reflection co-efficient of the wave of load connected to transmission line if surge impedance of the line is equal to load ?

(a) Zero
(b) Unity
(c) Infinity
(d) None of the above

Ans: a

786. The inverse definite mean time relays are used for over current and earth fault protection of transformer against

(a) heavy loads
(b) internal short-circuits
(c) external short-circuits
(d) all of the above

Ans: b

787. Over voltage protection is recommended for

(a) hydro-electric generators
(b) steam turbine generators
(c) gas turbine generators
(d) all of the above

Ans: d

788. Air blast circuit breakers for 400 kV power system are designed to operate in

(a) 100 microsecond
(b) 50 millisecond
(c) 0.5 sec

(d) 0.1 sec

Ans: b

789. Overfluxing protection is recommended for

(a) distribution transformer
(b) generator transformer of the power plant
(c) auto-transformer of the power plant
(d) station transformer of the power plant

Ans: b

790. Series capacitors are used to

(a) compensate for line inductive reactance
(b) compensate for line capacitive reactance
(c) improve line voltage
(d) none of the above

Ans: a

791. Admittance relay is _____ relay.

(a) impedance
(b) directional
(c) non-directional
(d) none of the above

Ans: b

792. The material used for fuse must have

(a) low melting point and high specific resistance
(b) low melting point and -low specific resistance
(c) high melting point and low specific resistance
(d) low melting point and any specific resistance

Ans: a

793. If the fault occurs near the impedance relay, the VII ratio will be

(a) constant for all distances
(b) lower than that of if fault occurs away from the relay
(c) higher than that of if fault occurs away from the relay
(d) none of the above

Ans: b

794. The torque produced in induction type relay (shaded pole structure) is

(a) inversely proportional to the current
(b) inversely proportional to the square of the current
(c) proportional to the current
(d) proportional to square of the current

Ans: b

795. The steady state stability of the power system can be increased by

(a) connecting lines in parallel
(b) connecting lines in series
(c) using machines of high impedance
(d) reducing the excitation of machines

Ans: a

796. The inductive interference between power and communication line can be minimized by

(a) transposition of the power line
(b) transposition of the communication line
(c) both (a) and (b)
(d) increasing the distance between the conductors

Ans: c

797. The power loss is an important factor for the design of

(a) transmission line
(b) motor
(c) generator
(d) feeder

Ans: a

798. A fuse is connected

(a) in series with circuit
(b) in parallel with circuit
(c) either in series or in parallel with circuit
(d) none of the above

Ans: a

799. H.R.C. fuse, as compared to a rewirable fuse, has

(a) no ageing effect
(b) high speed of operation
(c) high rupturing capacity
(d) all of the above

Ans: d

800. The fuse rating is expressed in terms of

(a) current
(b) voltage
(c) VAR
(d) kVA

Ans: a

801. The fuse blows off by

(a) burning
(b) arcing

(c) melting
(d) none of the above

Ans: c

802. On which of the following effects of electric current a fuse operates ?

(a) Photoelectric effect
(b) Electrostatic effect
(c) Heating effect
(d) Magnetic effect

Ans: c

803. An isolator is installed

(a) to operate the relay of circuit breaker
(b) as a substitute for circuit breaker
(c) always independent of the position of circuit breaker
(d) generally on both sides of a circuit breaker

Ans: d

804. A fuse in a motor circuit provides protection against

(a) overload
(b) short-circuit and overload
(c) open circuit, short-circuit and overload
(d) none of the above

Ans: b

805. Protection by fuses is generally not used beyond

(a) 20 A
(b) 50 A
(c) 100 A
(d) 200 A

Ans: c

806. A fuse is never inserted in

(a) neutral wire
(b) negative of D.C. circuit
(c) positive of D.C. circuit
(d) phase dine

Ans: a

807. Oil switches are employed for

(a) low currents circuits
(b) low voltages circuits
(c) high voltages and large currents circuits
(d) all circuits

Ans: c

808. A switchgear is device used for

(a) interrupting an electrical circuit
(b) switching an electrical circuit 111.
(c) switching and controlling an electrical circuit
(d) switching, controlling and protecting the electrical circuit and equipment

Ans: d

809. The fuse wire, in D.C. circuits, is inserted in

(a) negative circuit only
(b) positive circuit only
(c) both (a) and (b)
(d) either (a) or (b)

Ans: c

810. By which of the following methods is the major portion of the heat generated in a H.R.C. fuse is dissipated ?

(a) Radiation
(b) Convection
(c) Conduction
(d) All of the above

Ans: c

811. A short-circuit is identified by

(a) no current flow
(b) heavy current flow
(c) voltage drop
(d) voltage rise

Ans: b

812. The information to the circuit breaker under fault conditions is provided by

(a) relay
(b) rewirable fuse
(c) H.R.C. only
(d) all of the above

Ans: a

813. To limit short-circuit current in a power system are used.

(a) earth wires
(b) isolators
(c) H.R.C. fuses
(d) reactors

Ans: d

814. A balanced 3-phase system consists of

(a) zero sequence currents only
(b) positive sequence currents only

(c) negative and zero sequence currents
(d) zero, negative and positive sequence currents
Ans: b

815. In a single bus-bar system there will be complete shut down when
(a) fault occurs on the bus itself
(b) fault occurs on neutral line
(c) two or more faults occur simultaneously
(d) fault occurs with respect to earthing
Ans: a

816. The use of _____ instrument is merely confined within laboratories as standardizing instruments.
(a) absolute
(b) indicating
(c) recording
(d) integrating
Ans: a

817. Which of the following instruments indicate the instantaneous value of the electrical quantity being measured at the time at which it is being measured?
(a) Absolute instruments
(b) Indicating instruments
(c) Recording instruments
(d) Integrating instruments
Ans: b

818. _____ instruments are those which measure the total quantity of electricity delivered in a particular time.
(a) Absolute
(b) Indicating
(c) Recording
(d) Integrating
Ans: d

819. Which of the following are integrating instruments?
(a) Ammeters
(b) Voltmeters
(c) Wattmeters
(d) Ampere-hour and watt-hour meters
Ans: d

820. Resistances can be measured with the help of
(a) wattmeters

(b) voltmeters
(c) ammeters
(d) ohmmeters and resistance bridges
(e) all of the above
Ans: d

821. According to application, instruments are classified as
(a) switch board
(b) portable
(c) both (a) and (b)
(d) moving coil
(e) moving iron
(f) both (d) and (e)
Ans: c

822. Which of the following essential features is possessed by an indicating instrument?
(a) Deflecting device
(b) Controlling device
(c) Damping device
(d) All of the above
Ans: d

823. A _____ device prevents the oscillation of the moving system and enables the latter to
reach its final position quickly
(a) deflecting
(b) controlling
(c) damping
(d) any of the above
Ans: c

824. The spring material used in a spring control device should have the following property.
(a) Should be non-magnetic
(b) Most be of low temperature co-efficient
(c) Should have low specific resistance
(d) Should not be subjected to fatigue
(e) All of the above
Ans: e

825. Which of the following properties a damping oil must possess?
(a) Must be a good insulator
(b) Should be non-evaporating

(c) Should not have corrosive action upon the metal of the vane
(d) The viscosity of the oil should not change with the temperature
(e) All of the above
Ans: e

826. A moving-coil permanent-magnet instrument can be used as _____ by using a low resistance shunt.
(a) ammeter
(b) voltmeter
(c) flux-meter
(d) ballistic galvanometer
Ans: a

827. A moving-coil permanent-magnet instrument can be used as flux-meter
(a) by using a low resistance shunt
(b) by using a high series resistance
(c) by eliminating the control springs
(d) by making control springs of large moment of inertia
Ans: c

828. Which of the following devices may be used for extending the range of instruments?
(a) Shunts
(b) Multipliers
(c) Current transformers
(d) Potential transformers
(e) All of the above
A**ns: e**

829. An induction meter can handle current upto
(a) 10 A
(b) 30 A
(c) 60 A
(d) 100 A
Ans: d

830. For handling greater currents induction wattmeters are used in conjunction with
(a) potential transformers
(b) current transformers
(c) power transformers
(d) either of the above
(e) none of the above
Ans: b

831. Induction type single phase energy meters measure electric energy in

(a) kW
(b) Wh
(c) kWh
(d) VAR
(e) None of the above
Ans: c

832. Most common form of A.C. meters met with in every day domestic and industrial installations are

(a) mercury motor meters
(b) commutator motor meters
(c) induction type single phase energy meters
(d) all of the above
Ans: c

833. Which of the following meters are not used on D.C. circuits

(a) Mercury motor meters
(b) Commutator motor meters
(c) Induction meters
(d) None of the above
Ans: c

834. Which of the following is an essential part of a motor meter?

(a) An operating torque system
(b) A braking device
(c) Revolution registering device
(d) All of the above
Ans: d

835. A potentiometer may be used for

(a) measurement of resistance
(b) measurement of current
(c) calibration of ammeter
(d) calibration of voltmeter
(e) all of the above
Ans: e

836. is an instrument which measures the insulation resistance of an electric circuit relative to earth and one another,

(a) Tangent galvanometer
(b) Meggar

(c) Current transformer
(d) None of the above
Ans: b

837. The household energy meter is
(a) an indicating instrument
(b) a recording instrument
(c) an integrating instrument
(d) none of the above
Ans: c

838. The pointer of an indicating instrument should be
(a) very light
(b) very heavy
(c) either (a) or (b)
(d) neither (a) nor (b)
Ans: a

839. The chemical effect of current is used in
(a) D.C. ammeter hour meter
(b) D.C. ammeter
(c) D.C. energy meter
(d) none of the above
Ans: a

840. In majority of instruments damping is provided by
(a) fluid friction
(b) spring
(c) eddy currents
(d) all of the above
Ans: c

841. An ammeter is a
(a) secondary instrument
(b) absolute instrument
(c) recording instrument
(d) integrating instrument
Ans: a

842. In a portable instrument, the controlling torque is provided by
(a) spring
(b) gravity
(c) eddy currents

(d) all of the above
Ans: a

843. The disc of an instrument using eddy current damping should be of
(a) conducting and magnetic material
(b) non-conducting and magnetic material
(c) conducting and non-magnetic material
(d) none of the above
Ans: c

844. The switch board instruments
(a) should be mounted in vertical position
(6) should be mounted in horizontal position
(c) either (a) or (b)
(d) neither (a) nor (b)
Ans: a

845. The function of shunt in an ammeter is to
(a) by pass the current
(b) increase the sensitivity of the ammeter
(c) increase the resistance of ammeter
(d) none of the above
Ans: a

846. The multiplier and the meter coil in a voltmeter are in
(a) series
(b) parallel
(c) series-parallel
(d) none of the above
Ans: a

847. A moving iron instrument can be used for
(a) D.C. only
(b) A.C. only
(c) both D.C. and A.C.
Ans: c

848. The scale of a rectifier instrument is
(a) linear
(b) non-linear
(c) either (a) or (b)
(d) neither (a) nor (b)
Ans: a

849. For measuring current at high frequency we should use
(a) moving iron instrument
(b) electrostatic instrument
(c) thermocouple instrument
(d) none of the above
Ans: c

850. The resistance in the circuit of the moving coil of a dynamometer wattmeter should be
(a) almost zero
(b) low
(c) high
(d) none of the above
Ans: c

851. A dynamometer wattmeter can be used for
(a) both D.C. and A.C.
(b) D.C. only
(c) A.C. only
(d) any of the above
Ans: a

852. An induction wattmeter can be used for
(a) both D.C. and A.C.
(b) D.C. only
(c) A.C. only
(d) any of the above
Ans: b

853. The pressure coil of a wattmeter should be connected on the supply side of the current coil when
(a) load impedance is high
(b) load impedance is low
(c) supply voltage is low
(d) none of the above
Ans: a

854. In a low power factor wattmeter the pressure coil is connected
(a) to the supply side of the current coil
(b) to the load side of the current coil
(c) in any of the two meters at connection
(d) none of the above
Ans: b

855. In a low power factor wattmeter the compensating coil is connected
(a) in series with current coil
(b) in parallel with current coil
(c) in series with pressure coil
(d) in parallel with pressure coil
Ans: c

856. In a 3-phase power measurement by two wattmeter method, both the watt meters had identical readings. The power factor of the load was
(a) unity
(6) 0.8 lagging
(c) 0.8 leading
(d) zero
Ans: a

857. In a 3-phase power measurement by two wattmeter method the reading of one of the wattmeters was zero. The power factor of the load must be
(a) unity
(b) 0.5
(c) 0.3
(d) zero
Ans: b

858. The adjustment of position of shading bands, in an energy meter is done to provide
(a) friction compensation
(b) creep compensation
(c) braking torque
(d) none of the above
Ans: a

859. An ohmmeter is a
(a) moving iron instrument
(b) moving coil instrument
(c) dynamometer instrument
(d) none of the above
Ans: b

860. When a capacitor was connected to the terminal of ohmmeter, the pointer indicated a low resistance initially and then slowly came to infinity position. This shows that capacitor is

(a) short-circuited
(b) all right
(c) faulty
Ans: b

861. For measuring a very high resistance we should use
(a) Kelvin's double bridge
(b) Wheat stone bridge
(c) Meggar
(d) None of the above
Ans: c

862. The electrical power to a megger is provided by
(a) battery
(b) permanent magnet D.C. generator
(c) AC. generator
(d) any of the above
Ans: b

863. In a megger controlling torque is provided by
(a) spring
(b) gravity
(c) coil
(d) eddy current
Ans: c

864. The operating voltage of a meggar is about
(a) 6 V
(b) 12 V
(c) 40 V
(d) 100 V
Ans: d

865. Murray loop test can be used for location of
(a) ground fault on a cable
(b) short circuit fault on a cable
(c) both the ground fault and the short-circuit fault
(d) none of the above
Ans: c

866. Which of the following devices should be used for accurate measurement of low D.C. voltage ?
(a) Small range moving coil voltmeter

(b) D.C. potentiometer
(c) Small range thermocouple voltmeter
(d) None of the above
Ans: b

867. It is required to measure the true open circuit e.m.f. of a battery. The best device is
(a) D.C. voltmeter
(b) Ammeter and a known resistance
(c) D.C. potentiometer
(d) None of the above
Ans: c

868. A voltage of about 200 V can be measured
(a) directly by a D.C. potentiometer
(b) a D.C. potentiometer in conjunction with a volt ratio box
(c) a D.C. potentiometer in conjunction with a known resistance
(d) none of the above
Ans: b

869. A direct current can be measured by
(a) a D.C. potentiometer directly
(b) a D.C. potentiometer in conjunction with a standard resistance
(c) a D.C. potentiometer in conjunction with a volt ratio box
(d) none of the above
Ans: b

870. To measure a resistance with the help of a potentiometer it is
(a) necessary to standardise the potentiometer
(b) not necessary to standardise the potentiometer
(c) necessary to use a volt ratio box in conjunction with the potentiometer
(d) none of the above
Ans: b

871. A phase shifting transformer is used in conjunction with
(a) D.C. potentiometer
(b) Drysdale potentiometer
(c) A.C. co-ordinate potentiometer
(d) Crompton potentiometer
Ans: b

872. Basically a potentiometer is a device for
(a) comparing two voltages
(b) measuring a current

(c) comparing two currents
(d) measuring a voltage
(e) none of the above
Ans: a

873. In order to achieve high accuracy, the slide wire of a potentiometer should be
(a) as long as possible
(b) as short as possible
(c) neither too small not too large
(d) very thick
Ans: a

874. To measure an A. C. voltage by using an A.C. potentiometer, it is desirable that the supply for the potentiometer in taken
(a) from a source which is not the same as the unknown voltage
(b) from a battery
(c) from the same source as the unknown voltage
(d) any of the above
Ans: c

875. The stator of phase shifting transformer for use in conjunction with an A.C. potentiometer usually has a
(a) single-phase winding
(b) two-phase winding
(c) three-phase winding
(d) any of the above
Ans: b

876. In an AC. co-ordinate potentiometer, the currents in the phase and quadrature potentiometer are adjusted to be
(a) out of phase by 90°
(6) out of phase by 60°
(c) out of phase by 30°
(d) out of phase by 0°
(e) out of phase by 180°
Ans: a

877. A universal RLC bridge uses
(a) Maxwell bridge configuration for measurement of inductance and De Santa's bridge for measurement of capacitance

(b) Maxwell Wein bridge for measurement of inductance and modified De Santy's bridge for measurement of capacitance
(c) Maxwell Wein bridge for measurement of inductance and Wein bridge for measurement of capacitance
(d) Any of the above.
Ans: b

878. For measurements on high voltage capacitors, the suitable bridge is
(a) Wein bridge
(b) Modified De Santy's bridge
(c) Schering bridge
(d) Any of the above
(e) None of the above
Ans: c

879. In an Anderson bridge, the unknown inductance is measured in terms of
(a) known inductance and resistance
(b) known capacitance and resistance
(c) known resistance
(d) known inductance
Ans: b

880. Wagner earthing device is used to eliminate errors due to
(a) electrostatic coupling
(b) electromagnetic coupling
(c) both (a) and (b)
(d) none of the above
Ans: a

881. For measurement of mutual inductance we can use
(a) Anderson bridge
(b) Maxwell's bridge
(c) Heaviside bridge
(d) Any of the above
Ans: c

882. For measurement of inductance having high value, we should use
(a) Maxwell's bridge
(b) Maxwell Wein bridge
(c) Hay's bridge
(d) Any of the above
Ans: c

883. If the current in a capacitor leads the voltage by 80°, the loss angle of the capacitor is

(a) 10°
(b) 80°
(c) 120°
(d) 170°
Ans: a

884. In a Schering bridge the potential of the detector above earth potential is

(a) a few volts only
(6) 1 kV
(c) 5 kV
(d) 10 kV
Ans: a

885. To avoid the effect of stray magnetic field in A.C. bridges we can use

(a) magnetic screening
(b) Wagner earthing device
(c) wave filters
(d) any of the above
Ans: a

886. If an inductance is connected in one arm of bridge and resistances in the remaining three arms

(a) the bridge can always be balanced
(b) the bridge cannot be balanced
(c) the bridge can be balanced if the resistances have some specific values
Ans: b

887. A power factor meter has

(a) one current circuit and two pres¬sure circuits
(b) one current circuit and one pressure circuit
(c) two current circuits and one pres¬sure circuit
(d) none of the above
Ans: a

888. The two pressure coils of a single phase power factor meter have

(a) the same dimensions and the same number of turns
(b) the same dimension but different number of turns
(c) the same number of turns but different dimensions
(d) none of the above
Ans: a

889. In a single phase power factor meter the phase difference between the currents in the two pressure coils is

(a) exactly 0°
(b) approximately 0°
(c) exactly 90°
(d) approximately 90°
Ans: c

890. In a dynamometer 3-phase power factor meter, the planes of the two moving coils are at

(a) 0°
(b) 60°
(c) 90°
(d) 120°
Ans: d

891. In a vibrating reed frequency meter the natural frequencies of two adjacent reeds have a difference of

(a) 0.1 Hz
(b) 0.25 Hz
(c) 0.5 Hz
(d) 1.5 Hz
Ans: c

892. In a Weston frequency meter, the magnetic axes of the two fixed coils are

(a) parallel
(b) perpendicular
(c) inclined at 60°
(d) inclined at 120°
Ans: b

893. Weston frequency meter is

(a) moving coil instrument
(b) moving iron instrument
(c) dynamometer instrument
(d) none of the above
Ans: b

894. A Weston synchronoscope is a

(a) moving coil instrument
(b) moving iron instrument
(c) dynamometer instrument
(d) none of the above

Ans: c

895. In a Weston synchronoscope, the fixed coils are connected across
(a) bus-bars
(b) incoming alternator
(c) a lamp
(d) none of the above
Ans: b

896. In Weston synchronoscope the moving coil is connected across
(a) bus-bars
(b) incoming alternator
(c) fixed coils
(d) any of the above
Ans: a

897. The power factor of a single phase load can be calculated if the instruments available are
(a) one voltmeter and one ammeter
(b) one voltmeter, one ammeter and one wattmeter
(c) one voltmeter, one ammeter and one energy meter
(d) any of the above
Ans: b

898. The desirable static characteristics of a measuring system are
(a) accuracy and reproducibility
(b) accuracy, sensitivity and reproducibility
(c) drift and dead zone
(d) static error
Ans: b

899. The ratio of maximum displacement deviation to full scale deviation of the instrument is called
(a) static sensitivity
(b) dynamic deviation
(c) linearity
(d) precision or accuracy
Ans: c

900. Systematic errors are
(a) instrumental errors
(b) environmental errors
(c) observational errors
(d) all of the above

Ans: d

901. Standard resistor is made from
(a) platinum
(b) maganin
(c) silver
(d) nichrome
Ans: b

902. Commonly used standard capacitor is
(a) spherical type
(b) concentric cylindrical type
(c) electrostatic type
(d) multilayer parallel plate type
Ans: b

903. Operating torques in analogue instruments are
(a) deflecting and control
(b) deflecting and damping
(c) deflecting, control and damping
(d) vibration and balancing
Ans: c

904. Commonly used instruments in power system measurement are
(a) induction
(b) moving coil or iron
(c) rectifier
(d) electrostatic
Ans: a

905. Damping of the Ballistic galvanometer is made small to
(a) get first deflection large
(b) make the system oscillatory
(c) make the system critically damped
(d) get minimum overshoot
Ans: a

906. If an instrument has cramped scale for larger values, then it follows
(a) square law
(b) logarithmic law
(c) uniform law
(d) none of the above
Ans: b

907. Volt box is a component to
(a) extend voltage range
(6) measure voltage
(c) compare voltage in a box
(d) none of the above
Ans: a

908. E.m.f. of a Weston cell is accurately measured by
(a) electrostatic voltmeter
(b) hot wire voltmeter
(c) isothermal voltmeter
(d) electrodynamic voltmeter
Ans: a

909. The gravity controlled instrument has crowded scale because current is proportional to
(a) balancing weight
(b) deflection angle
(c) sine of deflection angle
Ans: c

910. A sensitive galvanometer produces large deflection for a
(a) small value of current
(b) large value of current
(c) large value of power
(d) large value of voltage
(e) none of the above
Ans: a

911. A multi range instrument has
(a) multiple shunt or series resistances inside the meter
(b) multi coil arrangement
(c) variable turns of coil
(d) multi range meters inside the measurement system
(e) any of the above
Ans: a

912. The rectifier instrument is not free from
(a) temperature error
(b) wave shape error
(c) frequency error

(d) all of the above
Ans: c

913. Alternating current is measured by
(a) induction ammeter
(b) permanent magnet type ammeter
(c) electrostatic ammeter
(d) moving iron repulsion type voltmeter
Ans: a

914. Most sensitive galvanometer is
(a) elastic galvanometer
(b) vibration galvanometer
(c) Duddlb galvanometer
(d) spot ballistic galvanometer
Ans: d

915. Instrument transformers are
(a) potential transformers
(b) current transformers
(c) both (a) and (b)
(d) power transformers
Ans: c

916. An instrument transformer is used to extend the range of
(a) induction instrument
(b) electrostatic instrument
(c) moving coil instrument
(d) any of the above
Ans: a

917. Wattmeter cannot be designed on the principle of
(a) electrostatic instrument
(b) thermocouple instrument
(c) moving iron instrument
(d) electrodynamic instrument
Ans: c

918. In an energy meter braking torque is produced to
(a) safe guard it against creep
(b) brake the instrument
(c) bring energy meter to stand still
(d) maintain steady speed and equal to driving torque

Ans: d

919. Various adjustments in an energy meter include
(a) light load or friction
(b) lag and creep
(c) overload and voltage compensation
(d) temperature compensation
(e) all of the above
Ans: e

920. The power of a n-phase circuit can be measured by using a minimum of
(a) (n - 1) wattmeter elements
(b) n wattmeter elements
(c) (n + 1) wattmeter elements
(d) 2n wattmeter elements
Ans: a

921. Two holes in the disc of energy meter are drilled at the opposite sides of the spindle to
(a) improve its ventilation
(b) eliminate creeping at no load
(c) increase its deflecting torque
(d) increase its braking torque
Ans: b

922. 107. Which of the following is measured by using a vector voltmeter ?
(a) Amplifier gain and phase shift
(b) Filler transfer functions
(c) Complex insertion loss
(d) All of the above
Ans: d

923. The principle on which vector voltmeter is based is
(a) that it works on the principle of complex variation
(b) that it measures the response of linear ramp voltage
(c) same as digital meter
(d) that it measures the amplitude of a single at two points and at the same time measures their phase difference
Ans: d

924. To measure radio frequency, the suitable frequency meter is
(a) Weston frequency meter
(b) reed vibrator frequency meter
(c) heterodyne frequency meter

(d) electrical resonance frequency meter
Ans: c

925. What is the primary function of a surge arrester in an electrical system?
A. Voltage amplification
B. Current reduction
C. Power factor correction
D. Protection against voltage surges
Answer: D

926. Which type of voltage spike is a surge arrester specifically designed to protect against?
A. Steady-state voltage
B. Transient voltage
C. Alternating voltage
D. DC voltage
Answer: B

927. In a power distribution system, where is a surge arrester typically installed for effective protection?
A. Near the generator
B. Near the transformer
C. Near the load center
D. Near the circuit breaker
Answer: C

928. What type of material is commonly used for the construction of surge arresters?
A. Copper
B. Aluminum
C. Silicon
D. Zinc
Answer: C

929. What is the primary mechanism by which surge arresters divert excessive voltage?
A. Voltage absorption
B. Voltage attenuation
C. Voltage diversion
D. Voltage reflection
Answer: C

930. How does a surge arrester differ from a circuit breaker in terms of operation?
A. Circuit breakers protect against overcurrent; surge arresters protect against voltage surges.

B. Surge arresters protect against overcurrent; circuit breakers protect against voltage surges.
C. Both protect against overcurrent.
D. Both protect against voltage surges.
Answer: A

931. What is the significance of the "sparkover voltage" rating in surge arresters?
A. The voltage at which the arrester starts conducting
B. The voltage at which the arrester stops conducting
C. The maximum operating voltage
D. The voltage required for circuit initiation
Answer: A

932. Why is it important for surge arresters to have a low residual voltage?
A. To increase power factor
B. To reduce energy consumption
C. To minimize potential damage to equipment
D. To regulate voltage fluctuations
Answer: C

933. How do metal oxide surge arresters differ from other types?
A. They have a higher sparkover voltage.
B. They exhibit nonlinear voltage-current characteristics.
C. They are made of copper.
D. They are only effective for DC systems.
Answer: B

934. What role does the "follow current" play in surge arrester operation?
A. It represents the maximum operating current.
B. It indicates the current that follows the voltage surge.
C. It is the residual current after sparkover.
D. It is unrelated to surge arrester operation.
Answer: C

935. What is the purpose of the "energy handling capability" specification in surge arresters?
A. To measure the speed of surge diversion
B. To assess the arrester's ability to absorb and dissipate energy
C. To determine the sparkover voltage
D. To calculate the follow current
Answer: B

936. How do surge arresters contribute to the protection of sensitive electronic equipment in power systems?

A. By increasing voltage levels
B. By reducing power factor
C. By diverting voltage surges to the ground
D. By regulating current flow
Answer: C

937. What is the role of a surge counter in the maintenance of surge arresters?

A. To measure voltage levels
B. To count the number of surges diverted
C. To regulate the sparkover voltage
D. To monitor follow current
Answer: B

938. How does the "let-through voltage" of a surge arrester impact the connected equipment?

A. Higher let-through voltage protects equipment better.
B. Lower let-through voltage provides better protection.
C. Let-through voltage has no impact on equipment protection.
D. Let-through voltage determines equipment power consumption.
Answer: B

939. What is the primary reason for using a combination of surge arresters with different voltage ratings in a power system?

A. To increase the overall power factor
B. To provide redundancy in surge protection
C. To amplify the transient voltage
D. To reduce the energy handling capability
Answer: B

940. In what scenarios might a surge arrester fail to provide effective protection?

A. During low-current conditions
B. During high-current conditions
C. During steady-state voltage
D. During normal operating conditions
Answer: B

941. How does the "impulse ratio" influence the performance of a surge arrester?

A. Higher impulse ratio improves performance.
B. Lower impulse ratio improves performance.
C. Impulse ratio has no impact on performance.
D. Impulse ratio regulates sparkover voltage.

Answer: A

942. What measures can be taken to enhance the service life of surge arresters?
A. Increasing the sparkover voltage
B. Reducing the energy handling capability
C. Implementing proper grounding
D. Using surge arresters with the same voltage rating
Answer: C

943. How does the location of a surge arrester installation impact its effectiveness?
A. Proximity to the generator enhances performance.
B. Proximity to the load center enhances performance.
C. Installation location has no impact on performance.
D. Proximity to the circuit breaker enhances performance.
Answer: B

944. What is the role of the "residual voltage" specification in surge arrester performance?
A. It determines the sparkover voltage.
B. It indicates the voltage remaining across the arrester after surge diversion.
C. It measures the following current.
D. It regulates the impulse ratio.
Answer: B

945. What is the purpose of the "protective level" specification in surge arresters?
A. To define the maximum voltage withstand capability
B. To determine the follow current magnitude
C. To indicate the voltage at which the arrester starts diverting surges
D. To regulate the energy handling capability
Answer: C

946. Why is it crucial to consider the ambient temperature when selecting surge arresters?
A. Ambient temperature affects the surge arrester's color
B. Surge arresters are not affected by ambient temperature
C. To ensure the arrester's specified ratings are maintained
D. Ambient temperature influences the sparkover voltage
Answer: C

947. What role does the "varistor" play in the operation of a metal oxide surge arrester?
A. To regulate the sparkover voltage
B. To provide mechanical support to the arrester

C. To absorb and divert surge currents
D. To measure the follow current
Answer: C

948. How does the voltage protection level of a surge arrester impact the connected equipment?
A. Higher voltage protection level provides better protection
B. Lower voltage protection level provides better protection
C. Voltage protection level has no impact on equipment protection
D. Voltage protection level determines the follow current
Answer: B

949. What is the consequence of exceeding the maximum energy handling capability of a surge arrester?
A. Improved surge protection
B. Reduced follow current
C. Potential damage to the surge arrester
D. Increased sparkover voltage
Answer: C

950. In surge arrester applications, what is the function of the "ground lead"?
A. To regulate the sparkover voltage
B. To provide a low-impedance path to the ground
C. To measure the follow current
D. To determine the energy handling capability
Answer: B

951. How do surge arresters protect against overvoltages caused by lightning strikes?
A. By increasing the follow current
B. By reducing the sparkover voltage
C. By diverting the lightning-induced surge to the ground
D. By regulating the impulse ratio
Answer: C

952. What is the significance of the "voltage protection level residual voltage" in surge arrester specifications?
A. It indicates the voltage at which the arrester starts conducting
B. It represents the maximum operating voltage
C. It defines the voltage across the arrester after surge diversion
D. It measures the follow current
Answer: C

953. What is the role of the "arrester duty cycle" in surge arrester applications?

A. To regulate the sparkover voltage
B. To determine the energy handling capability
C. To measure the follow current
D. To assess the arrester's ability to handle repetitive surges
Answer: D

954. How does the "aging rate" specification impact the long-term performance of surge arresters?

A. Higher aging rate improves performance
B. Lower aging rate improves performance
C. Aging rate has no impact on performance
D. Aging rate influences the energy handling capability
Answer: B

955. What is the primary difference between surge arresters and lightning rods in terms of functionality?

A. Surge arresters provide a low-impedance path to the ground, while lightning rods absorb lightning strikes.
B. Surge arresters regulate voltage fluctuations, while lightning rods divert high-frequency currents.
C. Surge arresters protect against voltage surges, while lightning rods provide a path for lightning to reach the ground.
D. Surge arresters control overcurrent conditions, while lightning rods enhance power factor.
Answer: C

956. What is the significance of the "response time" specification in surge arrester performance?

A. It measures the time it takes for the arrester to conduct after a surge event.
B. It indicates the duration of the follow current.
C. It regulates the sparkover voltage.
D. It measures the energy handling capability.
Answer: A

957. How do surge arresters contribute to the prevention of insulation breakdown in electrical systems?

A. By increasing the sparkover voltage
B. By regulating power factor
C. By providing a low-impedance path for surges
D. By controlling the let-through voltage
Answer: C

958. What role does the "self-extinguishing capability" play in surge arrester safety?
A. It measures the follow current magnitude.
B. It regulates the sparkover voltage.
C. It ensures the arrester extinguishes follow current quickly.
D. It determines the energy handling capability.
Answer: C

959. Why is it essential for surge arresters to be properly grounded?
A. Grounding increases the sparkover voltage.
B. Proper grounding reduces the energy handling capability.
C. Grounding provides a low-impedance path for surge currents.
D. Grounding has no impact on surge arrester performance.
Answer: C

960. How does the "let-through energy" specification impact the protection provided by a surge arrester?
A. Higher let-through energy provides better protection.
B. Lower let-through energy provides better protection.
C. Let-through energy has no impact on protection.
D. Let-through energy determines the sparkover voltage.
Answer: B

961. What is the purpose of the "insulation coordination" concept in surge arrester design?
A. To improve power factor correction.
B. To optimize the impulse ratio.
C. To ensure compatibility with system insulation levels.
D. To regulate the sparkover voltage.
Answer: C

962. How does the "continuous operating voltage" specification influence surge arrester selection?
A. It determines the energy handling capability.
B. It regulates the sparkover voltage.
C. It indicates the maximum continuous voltage the arrester can withstand.
D. It measures the follow current.
Answer: C

963. What challenges may arise if surge arresters are not periodically inspected and maintained?
A. Reduced sparkover voltage
B. Increased follow current

C. Enhanced energy handling capability
D. Potential degradation and failure
Answer: D

964. capability" specification impact surge arrester performance in repetitive surge events?
A. Higher duty cycle withstand capability improves performance.
B. Lower duty cycle withstand capability improves performance.
C. Duty cycle withstand capability has no impact on performance.
D. Duty cycle withstand capability determines the sparkover voltage.
Answer: A

965. How does the "pressure relief capability" contribute to the safety of surge arresters?
A. It regulates the sparkover voltage.
B. It ensures faster response time.
C. It prevents arrester overheating by releasing internal pressure.
D. It determines the let-through energy.
Answer: C

966. In terms of construction, what material is commonly used for the varistor in a surge arrester?
A. Copper
B. Silicon
C. Aluminum
D. Zinc
Answer: B

967. What is the purpose of the "creepage distance" in the design of surge arresters?
A. To measure the follow current
B. To determine the sparkover voltage
C. To provide mechanical support
D. To prevent arcing across the arrester surface
Answer: D

968. How does the "overvoltage protection level" specification relate to the voltage protection level of a surge arrester?
A. It represents the minimum voltage the arrester can handle.
B. It is equivalent to the sparkover voltage.
C. It indicates the maximum voltage the arrester can withstand.
D. It measures the energy handling capability.
Answer: B

969. How does the "nonlinear resistance" characteristic of a varistor in a surge arrester contribute to surge protection?

A. It minimizes follow current.
B. It enhances the sparkover voltage.
C. It provides a low-impedance path during surges.
D. It determines the let-through energy.
Answer: C

970. What is the significance of the "class" designation in surge arrester specifications?

A. It determines the energy handling capability.
B. It regulates the sparkover voltage.
C. It indicates the arrester's response time.
D. It defines the application and performance characteristics.
Answer: D

971. How does the "temporary overvoltage withstand capability" specification contribute to surge arrester performance?

A. It measures the energy handling capability.
B. It indicates the maximum continuous voltage the arrester can withstand.
C. It assesses the arrester's ability to handle temporary overvoltages.
D. It determines the impulse ratio.
Answer: C

972. What is the role of the "follow current extinguishing time" in surge arrester specifications?

A. To regulate the sparkover voltage.
B. To measure the follow current magnitude.
C. To determine the energy handling capability.
D. To assess how quickly the arrester extinguishes follow current.
Answer: D

973. What is the purpose of the "residual voltage at rated current" specification in surge arrester performance?

A. To determine the impulse ratio.
B. To measure the sparkover voltage.
C. To indicate the voltage remaining across the arrester after rated current.
D. To assess the arrester's insulation coordination.
Answer: C

974. How does the "installation category" impact the selection and placement of surge arresters?

A. It determines the impulse ratio.
B. It measures the energy handling capability.

C. It defines the system's insulation coordination.
D. It indicates the specific application and environment for arrester installation.
Answer: D

975. What role does the "aging process" play in the performance of surge arresters over time?
A. Aging process improves surge arrester efficiency.
B. Aging process accelerates follow current.
C. Aging process may lead to degradation and reduced efficiency.
D. Aging process determines the impulse ratio.
Answer: C

976. How does the "coordinated protection" concept enhance the overall effectiveness of surge protection systems?
A. Coordinated protection minimizes insulation coordination.
B. Coordinated protection ensures synchronization with power factor correction.
C. Coordinated protection optimizes the response time of individual protection devices.
D. Coordinated protection increases the follow current magnitude.
Answer: C

977. In surge arrester applications, what does the "maximum follow current" specification indicate?
A. It measures the energy handling capability.
B. It determines the sparkover voltage.
C. It indicates the highest follow current that the arrester can handle.
D. It regulates the let-through energy.
Answer: C

978. What is the primary purpose of the "surge arrester duty cycle"?
A. To measure the energy handling capability.
B. To assess the arrester's insulation coordination.
C. To determine the sparkover voltage.
D. To evaluate the arrester's ability to handle repetitive surges.
Answer: D

979. How does the "monitoring capability" of surge arresters contribute to maintenance practices?
A. Monitoring capability determines the sparkover voltage.
B. Monitoring capability counts the number of surges diverted.
C. Monitoring capability measures the follow current magnitude.
D. Monitoring capability has no impact on maintenance.
Answer: B

980. What is the function of the "fault current withstand capability" in surge arresters?

A. To determine the sparkover voltage.
B. To regulate the let-through energy.
C. To assess the arrester's ability to handle fault currents.
D. To measure the energy handling capability.
Answer: C

981. How does the "temperature derating" influence the performance of surge arresters in elevated temperatures?

A. Temperature derating improves performance.
B. Temperature derating accelerates follow current.
C. Temperature derating may be necessary to maintain performance in elevated temperatures.
D. Temperature derating has no impact on performance.
Answer: C

982. What is the significance of the "residual voltage at 10 kA" specification in surge arresters?

A. It determines the sparkover voltage.
B. It indicates the voltage remaining across the arrester after conducting a 10 kA surge.
C. It measures the follow current magnitude.
D. It regulates the let-through energy.
Answer: B

983. What role does the "continuous operating current" specification play in surge arresters?

A. It measures the energy handling capability.
B. It determines the sparkover voltage.
C. It indicates the maximum continuous current the arrester can handle.
D. It regulates the let-through energy.
Answer: C

984. How does the "mounting orientation" specification impact the installation of surge arresters?

A. Mounting orientation determines the sparkover voltage.
B. Mounting orientation has no impact on installation.
C. Mounting orientation influences the follow current magnitude.
D. Mounting orientation specifies the permissible positions for arrester installation.
Answer: D

985. What is the significance of the "sealed design" in surge arresters?

A. Sealed design has no impact on performance.
B. Sealed design protects the arrester from environmental factors, ensuring longevity and

reliability.
C. Sealed design determines the sparkover voltage.
D. Sealed design measures the follow current magnitude.
Answer: B

986. How does the "thermal disconnector" feature enhance surge arrester safety?
A. Thermal disconnector accelerates follow current.
B. Thermal disconnector has no impact on safety.
C. Thermal disconnector disconnects the arrester in case of overheating, preventing potential hazards.
D. Thermal disconnector determines the sparkover voltage.
Answer: C

987. What role does the "corrosion resistance" feature play in surge arresters?
A. Corrosion resistance has no impact on performance.
B. Corrosion resistance determines the sparkover voltage.
C. Corrosion resistance enhances the arrester's resistance to corrosive environments.
D. Corrosion resistance measures the follow current magnitude.
Answer: C

988. How does the "modular design" feature contribute to the flexibility of surge arresters in various applications?
A. Modular design has no impact on flexibility.
B. Modular design determines the sparkover voltage.
C. Modular design allows for customization and easy integration into different systems.
D. Modular design measures the energy handling capability.
Answer: C

989. What is the purpose of the "hybrid technology" in surge arresters?
A. Hybrid technology accelerates follow current.
B. Hybrid technology has no impact on performance.
C. Hybrid technology combines different protection methods to enhance overall surge protection.
D. Hybrid technology determines the sparkover voltage.
Answer: C

990. How does the "short-circuit withstand capability" feature contribute to the reliability of surge arresters?
A. Short-circuit withstand capability determines the sparkover voltage.
B. Short-circuit withstand capability has no impact on reliability.
C. Short-circuit withstand capability enhances the arrester's ability to withstand short-circuit currents.
D. Short-circuit withstand capability measures the follow current magnitude.

Answer: C

991. What is the significance of the "ambient temperature range" specification in surge arresters?

A. Ambient temperature range determines the sparkover voltage.
B. Ambient temperature range has no impact on performance.
C. Ambient temperature range specifies the range of temperatures within which the arrester can operate effectively.
D. Ambient temperature range measures the energy handling capability.
Answer: C

992. How does the "failure mode" specification in surge arresters impact their overall safety?

A. Failure mode has no impact on safety.
B. Failure mode determines the sparkover voltage.
C. Failure mode specifies how the arrester behaves in the event of failure, ensuring safety.
D. Failure mode measures the follow current magnitude.
Answer: C

993. What is the role of the "self-healing capability" feature in surge arresters?

A. Self-healing capability accelerates follow current.
B. Self-healing capability has no impact on performance.
C. Self-healing capability allows the arrester to recover from partial failures and maintain functionality.
D. Self-healing capability determines the sparkover voltage.
Answer: C

994. How does the "frequency range" specification in surge arresters impact their compatibility with different electrical systems?

A. Frequency range determines the sparkover voltage.
B. Frequency range has no impact on compatibility.
C. Frequency range specifies the range of frequencies within which the arrester can operate effectively.
D. Frequency range measures the follow current magnitude.
Answer: C

995. How does the "self-extinguishing casing" feature in surge arresters contribute to safety?

A. Self-extinguishing casing determines the sparkover voltage.
B. Self-extinguishing casing has no impact on safety.
C. Self-extinguishing casing prevents the spread of fire by extinguishing itself, enhancing

safety.
D. Self-extinguishing casing measures the energy handling capability.
Answer: C

996. What role does the "grounding system compatibility" specification play in surge arresters?
A. Grounding system compatibility determines the sparkover voltage.
B. Grounding system compatibility has no impact on performance.
C. Grounding system compatibility ensures the arrester is suitable for different grounding configurations.
D. Grounding system compatibility measures the follow current magnitude.
Answer: C

997. How does the "mounting accessories" specification impact the installation of surge arresters?
A. Mounting accessories determine the sparkover voltage.
B. Mounting accessories have no impact on installation.
C. Mounting accessories provide options and support for secure and efficient arrester installation.
D. Mounting accessories measure the energy handling capability.
Answer: C

998. What is the significance of the "resistance to environmental conditions" feature in surge arresters?
A. Resistance to environmental conditions determines the sparkover voltage.
B. Resistance to environmental conditions has no impact on performance.
C. Resistance to environmental conditions ensures the arrester can withstand harsh weather and environmental factors.
D. Resistance to environmental conditions measures the follow current magnitude.
Answer: C

999. How does the "magnetic-free construction" feature in surge arresters impact their interference with nearby equipment?
A. Magnetic-free construction determines the sparkover voltage.
B. Magnetic-free construction has no impact on interference.
C. Magnetic-free construction minimizes magnetic interference with nearby equipment.
D. Magnetic-free construction measures the energy handling capability.
Answer: C

1000. What role does the "shielded design" feature play in surge arresters?
A. Shielded design determines the sparkover voltage.
B. Shielded design has no impact on performance.
C. Shielded design reduces electromagnetic radiation, enhancing safety and minimizing

interference.
D. Shielded design measures the follow current magnitude.
Answer: C

1001. How does the "humidity resistance" specification impact the performance of surge arresters in humid environments?
A. Humidity resistance determines the sparkover voltage.
B. Humidity resistance has no impact on performance.
C. Humidity resistance ensures that the arrester maintains optimal performance in humid conditions.
D. Humidity resistance measures the energy handling capability.
Answer: C

1002. What is the purpose of the "integrated disconnect device" in surge arresters?
A. Integrated disconnect device determines the sparkover voltage.
B. Integrated disconnect device has no impact on performance.
C. Integrated disconnect device allows for the isolation of the arrester for maintenance or replacement.
D. Integrated disconnect device measures the follow current magnitude.
Answer: C

1003. How does the "reliable triggering mechanism" in surge arresters enhance their responsiveness to surges?
A. Reliable triggering mechanism determines the sparkover voltage.
B. Reliable triggering mechanism has no impact on responsiveness.
C. Reliable triggering mechanism ensures a quick and consistent response to surges.
D. Reliable triggering mechanism measures the energy handling capability.
Answer: C

1004. What role does the "convenient visual indication" feature play in surge arresters?
A. Convenient visual indication determines the sparkover voltage.
B. Convenient visual indication has no impact on performance.
C. Convenient visual indication provides an easy and clear way to assess the arrester's operational status.
D. Convenient visual indication measures the follow current magnitude.
Answer: C

1005. How does the "extended lifespan design" feature in surge arresters contribute to their durability?
A. Extended lifespan design determines the sparkover voltage.
B. Extended lifespan design has no impact on durability.
C. Extended lifespan design incorporates materials and technologies to prolong the

arrester's life.
D. Extended lifespan design measures the energy handling capability.
Answer: C

1006. What role does the "compact form factor" play in the installation of surge arresters in confined spaces?
A. Compact form factor determines the sparkover voltage.
B. Compact form factor has no impact on installation.
C. Compact form factor facilitates installation in confined spaces by requiring less physical space.
D. Compact form factor measures the follow current magnitude.
Answer: C

1007. How does the "wide operating temperature range" specification in surge arresters impact their performance in diverse environments?
A. Wide operating temperature range determines the sparkover voltage.
B. Wide operating temperature range has no impact on performance.
C. Wide operating temperature range ensures the arrester performs reliably across a broad range of temperatures.
D. Wide operating temperature range measures the energy handling capability.
Answer: C

1008. What is the significance of the "fail-safe design" in surge arresters?
A. Fail-safe design determines the sparkover voltage.
B. Fail-safe design has no impact on safety.
C. Fail-safe design minimizes the risk of catastrophic failure and ensures safe operation.
D. Fail-safe design measures the energy handling capability.
Answer: C

1009. How does the "quick response time" feature in surge arresters contribute to their effectiveness?
A. Quick response time determines the sparkover voltage.
B. Quick response time has no impact on effectiveness.
C. Quick response time ensures a rapid reaction to surges, providing swift protection to connected equipment.
D. Quick response time measures the follow current magnitude.
Answer: C

1010. What role does the "conformal coating" feature play in surge arresters?
A. Conformal coating determines the sparkover voltage.
B. Conformal coating has no impact on performance.
C. Conformal coating protects internal components from environmental factors,

enhancing durability.
D. Conformal coating measures the energy handling capability.
Answer: C

1011. How does the "smart grid compatibility" specification in surge arresters impact their integration into modern power systems?
A. Smart grid compatibility determines the sparkover voltage.
B. Smart grid compatibility has no impact on integration.
C. Smart grid compatibility ensures seamless integration with modern power systems, supporting advanced grid technologies.
D. Smart grid compatibility measures the follow current magnitude.
Answer: C

1012. What is the purpose of the "UV resistance" feature in surge arresters?
A. UV resistance determines the sparkover voltage.
B. UV resistance has no impact on performance.
C. UV resistance protects the arrester from the harmful effects of ultraviolet radiation, maintaining its structural integrity.
D. UV resistance measures the energy handling capability.
Answer: C

1013. How does the "single-pulse energy rating" specification in surge arresters provide information about their energy-handling capability?
A. Single-pulse energy rating determines the sparkover voltage.
B. Single-pulse energy rating has no impact on energy handling capability.
C. Single-pulse energy rating quantifies the arrester's ability to handle a single surge event, indicating its energy-handling capability.
D. Single-pulse energy rating measures the follow current magnitude.
Answer: C

1014. What role does the "distributed design" feature play in surge arresters?
A. Distributed design determines the sparkover voltage.
B. Distributed design has no impact on functionality.
C. Distributed design allows for multiple protection points, enhancing the overall surge protection coverage.
D. Distributed design measures the follow current magnitude.
Answer: C

1015. How does the "non-linear voltage-current characteristic" in surge arresters contribute to their protective function?
A. Non-linear voltage-current characteristic determines the sparkover voltage.
B. Non-linear voltage-current characteristic has no impact on protection.
C. Non-linear voltage-current characteristic allows the arrester to respond rapidly to

voltage surges, providing effective protection.
D. Non-linear voltage-current characteristic measures the energy handling capability.
Answer: C

1016. What role does the "fail-open design" play in the safety of surge arresters?
A. Fail-open design determines the sparkover voltage.
B. Fail-open design has no impact on safety.
C. Fail-open design ensures that the arrester remains operational even in the event of a failure, contributing to safety.
D. Fail-open design measures the energy handling capability.
Answer: C

1017. How does the "predictive maintenance features" in surge arresters enhance their overall reliability?
A. Predictive maintenance features determine the sparkover voltage.
B. Predictive maintenance features have no impact on reliability.
C. Predictive maintenance features use advanced monitoring to anticipate potential issues, enhancing overall reliability.
D. Predictive maintenance features measure the follow current magnitude.
Answer: C

1018. What is the significance of the "low residual voltage" specification in surge arresters?
A. Low residual voltage determines the sparkover voltage.
B. Low residual voltage has no impact on performance.
C. Low residual voltage indicates the minimal voltage that remains after surge diversion, enhancing protection.
D. Low residual voltage measures the energy handling capability.
Answer: C

1019. How does the "high discharge capacity" feature in surge arresters contribute to their effectiveness?
A. High discharge capacity determines the sparkover voltage.
B. High discharge capacity has no impact on effectiveness.
C. High discharge capacity allows the arrester to handle large amounts of surge energy, ensuring effective protection.
D. High discharge capacity measures the follow current magnitude.
Answer: C

1020. What role does the "frequency response" specification play in the compatibility of surge arresters with different electrical systems?
A. Frequency response determines the sparkover voltage.
B. Frequency response has no impact on compatibility.

C. Frequency response specifies the range of frequencies to which the arrester can respond, ensuring compatibility with diverse electrical systems.
D. Frequency response measures the energy handling capability.
Answer: C

1021. How does the "multi-stage protection" feature in surge arresters enhance their capability to safeguard sensitive equipment?
A. Multi-stage protection determines the sparkover voltage.
B. Multi-stage protection has no impact on capability.
C. Multi-stage protection provides layered defense, safeguarding sensitive equipment against different types of surges.
D. Multi-stage protection measures the follow current magnitude.
Answer: C

1022. What is the purpose of the "low let-through energy" specification in surge arresters?
A. Low let-through energy determines the sparkover voltage.
B. Low let-through energy has no impact on performance.
C. Low let-through energy indicates the minimal energy that passes through the arrester, reducing the impact on connected equipment.
D. Low let-through energy measures the energy handling capability.
Answer: C

1023. How does the "automatic self-test capability" in surge arresters contribute to their reliability?
A. Automatic self-test capability determines the sparkover voltage.
B. Automatic self-test capability has no impact on reliability.
C. Automatic self-test capability allows the arrester to perform regular self-tests, ensuring ongoing reliability.
D. Automatic self-test capability measures the follow current magnitude.
Answer: C

1024. What role does the "easy maintenance access" feature play in surge arresters?
A. Easy maintenance access determines the sparkover voltage.
B. Easy maintenance access has no impact on maintenance.
C. Easy maintenance access provides convenient access to internal components, facilitating straightforward maintenance.
D. Easy maintenance access measures the energy handling capability.
Answer: C

1025. How does the "compact surge arrester design" contribute to its versatility in installation?

A. Compact design determines the sparkover voltage.

B. Compact design has no impact on versatility.

C. Compact design allows for flexible installation in various spaces, enhancing versatility.

D. Compact design measures the energy handling capability.

Answer: C

1026. What role does the "follow current capability" specification play in assessing surge arrester performance?

A. Follow current capability determines the sparkover voltage.

B. Follow current capability has no impact on performance.

C. Follow current capability indicates the arrester's ability to handle residual currents, assessing its performance.

D. Follow current capability measures the energy handling capability.

Answer: C

1027. How does the "adaptive triggering technology" in surge arresters enhance their responsiveness?

A. Adaptive triggering technology determines the sparkover voltage.

B. Adaptive triggering technology has no impact on responsiveness.

C. Adaptive triggering technology adjusts the arrester's response based on the surge characteristics, enhancing responsiveness.

D. Adaptive triggering technology measures the follow current magnitude.

Answer: C

1028. What is the significance of the "continuous monitoring capability" in surge arresters?

A. Continuous monitoring capability determines the sparkover voltage.

B. Continuous monitoring capability has no impact on capability.

C. Continuous monitoring capability allows for ongoing surveillance of the arrester's status, ensuring optimal performance.

D. Continuous monitoring capability measures the energy handling capability.

Answer: C

1029. How does the "corrosion-resistant materials" feature in surge arresters impact their longevity?

A. Corrosion-resistant materials determine the sparkover voltage.

B. Corrosion-resistant materials have no impact on longevity.

C. Corrosion-resistant materials protect the arrester from corrosion, enhancing longevity and durability.

D. Corrosion-resistant materials measure the follow current magnitude.

Answer: C

1030. What role does the "remote monitoring capability" play in the management of surge arresters?

A. Remote monitoring capability determines the sparkover voltage.

B. Remote monitoring capability has no impact on management.

C. Remote monitoring capability enables users to monitor and manage surge arresters from a distance, enhancing efficiency in management.

D. Remote monitoring capability measures the energy handling capability.

Answer: C

1031. How does the "modular design" feature contribute to the adaptability of surge arresters?

A. Modular design determines the sparkover voltage.

B. Modular design has no impact on adaptability.

C. Modular design allows for the addition or removal of modules, enhancing adaptability to changing requirements.

D. Modular design measures the energy handling capability.

Answer: C

1032. What is the significance of the "integrated surge counter" in surge arresters?

A. Integrated surge counter determines the sparkover voltage.

B. Integrated surge counter has no impact on performance.

C. Integrated surge counter counts and records the number of surges the arrester has experienced, aiding in maintenance decisions.

D. Integrated surge counter measures the energy handling capability.

Answer: C

1033. How does the "thermal protection feature" in surge arresters contribute to their safety?

A. Thermal protection feature determines the sparkover voltage.

B. Thermal protection feature has no impact on safety.

C. Thermal protection feature prevents overheating, enhancing safety by protecting the arrester from thermal damage.

D. Thermal protection feature measures the follow current magnitude.

Answer: C

1034. What role does the "high surge current capacity" specification play in assessing surge arrester capabilities?

A. High surge current capacity determines the sparkover voltage.

B. High surge current capacity has no impact on capabilities.

C. High surge current capacity indicates the arrester's ability to handle high levels of

surge current, assessing its capabilities.
D. High surge current capacity measures the energy handling capability.
Answer: C

1035. "The mass of an ion liberated at an electrode is directly proportional to the quantity of electricity".The above statement is associated with
A. Newton's law
B. Faraday's law of electromagnetic
C. Faraday's law of electrolysis
D. Gauss's law
Answer: C

1036. The charge required to liberate one gram equivalent of any substance is known as _____ constant
A. time
B. Faraday's
C. Boltzman
D. Gauss's
Answer: B

1037. During the charging of a lead-acid cell
A. its voltage increases
B. it gives out energy
C. its cathode becomes dark chocolate brown in colour
D. specific gravity of H2SO4 decreases
Answer: A

1038. The capacity of a lead-acid cell does not depend on its
A. temperature
B. rate of charge
C. rate of discharge
D. quantity of active material
Answer: B

1039. During charging the specific gravity of the electrolyte of a lead-acid battery
A. increases
B. decreases
C. remains the same
D. becomes zero
Answer: A

1040. The active materials on the positive and negative plates of a fully charged lead-acid battery are
A. lead and lead peroxide
B. lead sulphate and lead

C. lead peroxide and lead
D. none of the above
Answer: C

1041. When a lead-acid battery is in fully charged condition, the color of its positive plate is
A. dark grey
B. brown
C. dark brown
D. none of above
Answer: C

1042. The active materials of a nickel-iron battery are
A. nickel hydroxide
B. powdered iron and its oxide
C. 21% solution of KOH
D. all of the above
Answer: D

1043. The ratio of ampere-hour efficiency to watt-hour efficiency of a lead-acid cell is
A. just one
B. always greater than one
C. always less than one
D. none of the above.
Answer: B

1044. The best indication about the state of charge on a lead-acid battery is given by
A. output voltage
B. temperature of electrolyte
C. specific gravity of electrolyte
D. none of the above
Answer: C

1045. The storage battery generally used in electric power station is
A. nickel-cadmium battery
B. zinc-carbon battery
C. lead-acid battery
D. none of the above
Answer: C

1046. The output voltage of a charger is
A. less than the battery voltage
B. higher than the battery voltage
C. the same as the battery voltage
D. none of the above
Answer: B

1047. Cells are connected in series in order to
A. increase the voltage rating
B. increase the current rating
C. increase the life of the cells
D. none of the above
Answer: A

1048. Five 2 V cells are connected in parallel. The output voltage is
A. 1 V
B. 1.5 V
C. 1.75 V
D. 2 V
Answer: D

1049. The capacity of a battery is expressed in terms of
A. current rating
B. voltage rating
C. ampere-hour rating
D. none of the above
Answer: C

1050. During the charging and discharging of a nickel-iron cell
A. corrosive fumes are produced
B. water is neither formed nor absorbed
C. nickel hydroxide remains unsplit
D. its e.m.f. remains constant
Answer: B

1051. As compared to constant-current system, the constant-voltage system of charging a lead acid cell has the advantage of
A. reducing time of charging
B. increasing cell capacity
C. both A and B
D. avoiding excessive gassing
Answer: C

1052. A dead storage battery can be revived by
A. adding distilled water
B. adding so-called battery restorer
C. a dose of H_2SO_4
D. none of the above
Answer: D

1053. As compared to a lead-acid cell, the efficiency of a nickel-iron cell is less due to its
A. compactness
B. lower e.m.f.
C. small quantity of electrolyte used
D. higher internal resistance
Answer: D

1054. Trickle charging of a storage battery helps to
A. maintain proper electrolyte level
B. increase its reserve capacity
C. prevent sulphation
D. keep it fresh and fully charged
Answer: D

1055. Those substances of the cell which take active part in chemical combination and hence produce electricity during charging or discharging are known as_____materials.
A. passive
B. active
C. redundant
D. inert
Answer: B

1056. In a lead-acid cell dilute sulfuric acid (electrolyte) approximately comprises the following
A. one part H2O, three parts H2SO4
B. two parts H2O, two parts H2SO4
C. three parts H2O, one part H2SO4
D. all H2S04
Answer: C

1057. It is noticed that durum charging
A. there is a rise in voltage
B. energy is absorbed by the cell
C. specific gravity of H2SO4 is increased
D. all of the above
Answer: D

1058. It is noticed that during discharging the following does not happen
A. both anode and cathode become PbS04
B. specific gravity of H2SO4 decreases
C. voltage of the cell decreases
D. the cell absorbs energy
Answer: D

1059. The ampere-hour efficiency of a lead-acid cell is normally between

A. 20 to 30%
B. 40 to 50%
C. 60 to 70%
D. 90 to 95%
Answer: D

1060. The watt-hour efficiency of a lead-acid cell varies between

A. 25 to 35%
B. 40 to 60%
C. 70 to 80%
D. 90 to 95%
Answer: C

1061. The capacity of a lead-acid cell is measured in

A. amperes
B. ampere-hours
C. watts
D. watt-hours
Answer: B

1062. The capacity of a lead-acid cell depends on

A. rate of discharge
B. temperature
C. density of electrolyte
D. all above
Answer: D

1063. When the lead-acid cell is fully charged, the electrolyte assumes _____ appearance

A. dull
B. reddish
C. bright
D. milky
Answer: D

1064. The e.m.f. of an Edison cell, when fully charged, is nearly

A. 1.4 V
B. 1 V
C. 0.9 V
D. 0.8 V
Answer: A

1065. The internal resistance of an alkali cell is nearly _____ times that of the lead-acid cell.

A. two
B. three
C. four
D. five
Answer: D

1066. The average charging voltage for alkali cell is about

A. 1 V
B. 1.2 V
C. 1.7 V
D. 2.1 V
Answer: C

1067. On the average the ampere-hour efficiency of an Edison cell is about

A. 40%
B. 60%
C. 70%
D. 80%
Answer: D

1068. The active material of the positive plates of silver-zinc batteries is

A. silver oxide
B. lead oxide
C. lead
D. zinc powder
Answer: A

1069. Lead-acid cell has a life of nearly charges and discharges

A. 500
B. 700
C. 1000
D. 1250
Answer: D

1070. Life of the Edison cell is at least

A. five years
B. seven years
C. eight years
D. ten years
Answer: A

1071. The internal resistance of a lead-acid cell is that of Edison cell

A. less than
B. more than
C. equal to
D. none of the above
Answer: A

1072. Electrolyte used in an Edison cell is

A. NaOH
B. KOH
C. HC1
D. HN03
Answer: B

1073. Electrolyte used in a lead-acid cell is

A. NaOH
B. onlyH2S04
C. only water
D. dilute H2SO4
Answer: D

1074. Negative plate of an Edison cell is made of

A. copper
B. lead
C. iron
D. silver oxide
Answer: C

1075. The open circuit voltage of any storage cell depends wholly upon

A. its chemical constituents
B. on the strength of its electrolyte
C. its temperature
D. all above
Answer: D

1076. The specific gravity of electrolyte is measured by

A. manometer
B. a mechanical gauge
C. hydrometer
D. psychrometer
Answer: C

1077. When the specific gravity of the electrolyte of a lead-acid cell is reduced to 1.1 to 1.15 the cell is in

A. charged state
B. discharged state

C. both A. and B
D. active state
Answer: B

1078. In _____ system the charging current is intermittently controlled at either a maximum or minimum value
A. two rate charge control
B. trickle charge
C. floating charge
D. an equalizing charge
Answer: A

1079. Over charging
A. produces excessive gassing
B. loosens the active material
C. increases the temperature resulting in buckling of plates
D. all above
Answer: D

1080. Undercharging
A. reduces specific gravity of the electrolyte
B. increases specific gravity of the electrolyte
C. produces excessive gassing
D. increases the temperature
Answer: A

1081. Internal short circuits are caused by
A. breakdown of one or more separators
B. excess accumulation of sediment at the bottom of the cell
C. both A. and B
D. none of the above
Answer: C

1082. The effect of sulphation is that the internal resistance
A. increases
B. decreases
C. remains same
D. none of the above
Answer: A

1083. Excessive formation of lead sulphate on the surface of the plates happens because of
A. allowing a battery to stand in discharged condition for a long time
B. topping up with electrolyte
C. persistent undercharging
D. low level of electrolyte
E. all above

Answer: E

1084. The substances which combine together to store electrical energy during the charge are called _____ materials
A. active
B. passive
C. inert
D. dielectric
Answer: A

1085. In a lead-acid cell, lead is called as
A. positive active material
B. negative active material
C. passive material
D. none of the above
Answer: B

1086. The lead-acid cell should never be discharged beyond
A. 1.8 V
B. 1.9 V
C. 2 V
D. 2.1 V
Answer: A

1087. On overcharging a battery
A. it will bring about chemical change in active materials
B. it will increase the capacity of the battery
C. it will raise the specific gravity of the electrolyte
D. none of the above will occur
Answer: D

1088. Each cell has a vent cap
A. to allow gases out when the cell is on charge
B. to add water to the cell if needed
C. to check the level of electrolyte
D. to do all above functions
Answer: D

1089. Following will occur if level of electrolyte falls below plates
A. capacity of the cell is reduced
B. life of the cell is reduced
C. open plates are converted to lead sulphate
D. all above
Answer: D

1090. In constant voltage charging method, the charging current from discharged to fully charged condition

A. decreases
B. increases
C. remains constant
D. none of the above
Answer: A

1091. ampere-hour capacity would deliver a current of

A. 48 amperes for 1 hour
B. 24 amperes for 2 hours
C. 8 amperes for 6 hours
D. 6 amperes for 8 hours
Answer: D

1092. In constant-current charging method, the supply voltage from discharged to fully charged condition

A. decreases
B. increases
C. remains constant
D. none of the above
Answer: B

1093. Battery charging equipment is generally installed

A. in well ventilated location
B. in clean and dry place
C. as near as practical to the battery being charged
D. in location having all above features
Answer: D

1094. Following will happen if the specific gravity of electrolyte becomes more than 1.23.

A. Loss of capacity
B. Loss of life
C. Corrosion of the grids of the plate
D. All above
Answer: D

1095. Batteries are charged by

A. rectifiers
B. engine generator sets
C. motor generator sets
D. any one of the above methods
Answer: D

1096. Cell short circuit results in

A. low sp. gravity electrolyte
B. abnormal high temperature
C. reduced gassing on charge
D. all above
Answer: D

1097. Internal resistance of a cell is reduced by

A. using vent plug to permit gas formed during discharge
B. increasing the plate area
C. putting plates very close together
D. all above methods
Answer: D

1098. Capacity of dry cells is

A. more when it is supplying current for intermittent periods
B. more when it is supplying current for continuous periods
C. unaffected by the type of discharge
D. none of the above
Answer: A

1099. Battery container should be acid resistance, therefore it is made up of

A. glass
B. plastic
C. wood
D. all above
Answer: D

1100. Sulphated cells are indicated by

A. the loss of capacity of the cell
B. the decrease of the specific gravity
C. the low voltage of the cell on discharge
D. all above conditions
Answer: D

1101. In a lead-acid cell, if the specific gravity of sulphuric acid is 1.8, it will require following ratio of acid to water to get mixture of specific gravity of 1.3

A. 6 parts of acid to 4 parts of water
B. 4 parts of acid to 4 parts of water
C. 4 parts of acid to 6 parts of water
D. 4 parts of acid to 8 parts of water
Answer: C

1102. Local action in a battery is indicated by

A. excessive gassing under load conditions

B. excessive drop in the specific gravity of electrolyte even when the cell is on open circuit

C. both A. and B

D. none of the above

Answer: D

1103. Following will happen if battery charging rate is too high

A. excessive gassing will occur

B. temperature rise will occur

C. bulging and buckling of plates will occur

D. all above will occur

Answer: D

1104. Internal resistance of a cell is due to

A. resistance of electrolyte

B. electrode resistance

C. surface contact resistance between electrode and electrolyte

D. all above

Answer: D

1105. If a battery is wrongly connected on charge following will happen

A. current delivered by the battery will be high

B. current drawing will be nil

C. current drawing will be very small

D. current drawing will be very high

Answer: D

1106. In order that a hydrometer may float vertically in electrolyte its C.G. should be

A. lowered

B. raised

C. undisturbed

D. displaced sideways

Answer: A

1107. If a lead-acid cell is discharged below 1.8 V the following will happen.

A. Capacity of cell will reduce

B. Sulphation of plates will occur

C. Internal resistance will increase

D. All above will occur

Answer: D

1108. Life of the batteries is in the following ascending order.

A. Lead-acid cell, Edison cell, Nickel cadmium cell

B. Lead-acid cell, Nickel-cadmium cell, Edison cell

C. Edison cell, Nickel-cadmium cell, lead-acid cell
D. Nickel-cadmium cell, Edison cell, lead-acid cell
Answer: A

1109. Persons preparing electrolyte should wear
A. goggles or other face shield
B. rubber
C. rubber boots and gloves
D. all above safety devices
Answer: D

1110. Excessive charging a battery tends to
A. produce gassing
B. increase the internal resistance of the battery
C. to corrode the positive plates into lead peroxide thereby weakening them physically
D. bring about all above changes
Answer: D

1111. Shelf life of a small dry cell is
A. equal to that of large dry cell
B.less than that of large dry cell
C. more than that of large dry cell
D. none of the above
Answer: B

1112. The current flow through electrolyte is due to the movement of
A. ions
B. holes
C. electrons
D. none of the above
Answer: A

1113. Level of electrolyte in a cell should be _____ the level of plates
A. below
B. equal to
C. above
D. none of the above
Answer: C

1114. During discharge, the active material of both the positive and negative plates is changed to
A. Pb
B. Pb02
C. PbO
D. PbS04
Answer: D

1115. _____ of electrolyte indicates the state of charge of the battery

A. colour
B. mass
C. viscosity
D. specific gravity
Answer: D

1116. The following indicate that battery on charge has attained full charge

A. colour of electrode
B. gassing
C. specific gravity
D. all above
Answer: D

1117. Dry cell is modification of

A. Deniell cell
B. Leclanche cell
C. Lead-acid cell
D. Edison cell
Answer: B

1118. Capacity of a battery.is expressed in

A. Ah
B. Vh
C. Wh
D. kWh
Answer: A

1119. In alkaline cell the electrolyte is

A. dilute sulphuric acid
B. concentrated sulphuric acid
C. NaOH
D. KOH
Answer: D

1120. Self charge of a Ni-Fe cell is _____ Edison cell.

A. equal to
B. less than
C. more than
D. much more than
Answer: B

1121. Ampere hour capacity of an industrial battery is based on ____ hours discharge rate.

A. 8
B. 12
C. 16
D. 24
Answer: A

1122. The body of Edison cell is made of

A. bakelite
B. rubber
C. nickel plated steel
D. aluminium
Answer: C

1123. Specific gravity of electrolyte in Edison cell is

A. 0.8
B. 0.95
C. 1.1
D. 1.21
Answer: D

1124. All the electrical connections between the battery and vehicle should be by

A. thin aluminium wires
B. thin copper wires
C. rigid cables
D. flexible cables
Answer: D

1125. A battery of 6 cells will show a drop of _____ volts from fully charged state to fully discharged state.

A. 1.0
B. 1.5
C. 2.4
D. 2.9
Answer: C

1126. During the idle period of the battery, strong electrolyte tends to change the active material of the cell into

A. Pb02
B. PbSC-4
C. PbO
D. Pb
Answer: B

1127. Charging of sulphated battery produces ____ heat.

A. no
B. very little
C. less
D. more
Answer: D

1128. Hydrogen evolved during charging produces explosive mixture when it is more than

A. 2%
B. 4%
C. 6%
D. 8%
Answer: D

1129. Weston standard cell at 20°C has voltage of ____ volts.

A. 0.8
B. 0.9
C. 1.0187
D. 1.5
Answer: C

1130. Extent of corrosion in the underground metal work depends upon

A. amount of moisture
B. type of metals
C. type of soil chemicals
D. all above factors
Answer: D

1131. Mercury cell has which of the following characteristics ?

A. Flat discharge current-voltage curve
B. High power to weight ratio
C. Comparatively longer shelf life under adverse conditions of high temperature and humidity
D. All of the above
Answer: D

1132. Charging a sulphated battery at high rate results in

A. boiling of electrolyte due to gassing
B. warping of plates
C. damage to separators, cell caps covers and battery case due to excessive temperature
D. all above
Answer: D

1133. Short circuiting of a cell may be caused

A. buckling of plates
B. faulty separators

C. lead particles forming circuit between positive and negative plates
D. All of the above
Answer: D

1134. In a battery cover is placed over the element and sealed to the top of the battery container. This is done
A. to reduce evaporation of water from electrolyte
B. to exclude dirt and foreign matter from the electrolyte
C. to discharge both of the above functions
D. to discharge none of the above functions
Answer: C

1135. For a cell to work, which of the following condition(s) become necessary ?
A. Two electrodes of different meta's should be inserted in the electrolyte, not touching each other
B. Electrolyte must chemically react with one of the electrodes
C. Electrolyte liquid or paste should be conducting
D. All above three conditions are necessary
Answer: D

1136. Which of the following primary cells has the lowest voltage ?
A. Lithium
B. Zinc-chloride
C. Mercury
D. Carbon-zinc
Answer: C

1137. Which of the following primary cells has the highest voltage ?
A. Manganese-alkaline
B. Carbon-zinc
C. Lithium
D. Mercury
Answer: C

1138. While preparing electrolyte for a lead-acid battery
A. water is poured into acid
B. acid is poured into water
C. anyone of the two can be added to other chemical
Answer: B

1139. Which of the following battery is used for air-craft ?
A. Lead-acid battery
B. Nickel-iron battery
C. Dry cell battery
D. Silver oxide battery

Answer: B

1140. Which of the following cell has a. reversible chemical reaction ?
A. Lead-acid
B. Mercury oxide
C. Carbon-zinc
D. Silver-oxide
Answer: A

1141. Which of the following is incorrect ?
A. A storage cell has a reversible chemical reaction
B. A lead-acid cell can be recharged
C. A carbon-zinc cell has unlimited shelf life
D. A primary cell has an irreversible chemical reaction
Answer: C

1142. Which of the following has lower sp. gravity V
A. Dilute H2S04
B. Concentrated H2SO4
C. Water
D. Any of the above
Answer: C

1143. Under normal charging rate, the charging current should be
A. 10% of capacity
B. 20% of capacity
C. 30% of capacity
D. 40% of capacity
Answer: A

1144. When two batteries are connected in parallel, it should be ensured that
A. they have same e.m.f.
B. they have same make
C. they have same ampere-hour capacity
D. they have identical internal resistance
Answer: A

1145. A typical output of a solar cell is
A. 0.1V
B. 0.26 V
C. 1.1 V
D. 2 V
Answer: B

1146. Petroleum jelly is applied to the electrical connections to the lead-acid battery

A. prevent local heating
B. prevent short-circuiting
C. reduce path resistance
D. prevent corrosion
Answer: D

1147. When the load resistance equals the generator resistance which of the following will be maximum ?

A. Current
B. Efficiency of the circuit
C. Power in the load resistance
D. Voltage across the load resistance
Answer: C

1148. The common impurity in the electrolyte of lead-acid battery is

A. chlorine
B. dust particles
C. lead crystals
D. iron
Answer: D

1149. In a lead-acid battery the energy is stored in the form of

A. charged ions
B. chemical energy
C. electrostatic energy
D. electromagnetic energy
Answer: B

1150. Which among the following constitutes the major load for an automobile battery ?

A. Brake light
B. Self starter
C. Parking lights
D. Spark plugs
Answer: B

1151. Which of the following factors adversely affects the capacity of the leadacid battery ?

A. Temperature of surroundings
B. Specific gravity of electrolyte
C. Rate of discharge
D. All of the above
Answer: D

1152. Cells are connected in parallel to

A. increase the efficiency
B. increase the current capacity
C. increase the voltage output
D. increase the internal resistance
Answer: B

1153. A constant-voltage generator has

A. minimum efficiency
B. minimum current capacity
C. low internal resistance
D. high internal resistance
Answer: C

1154. Satellite power requirement is provided through

A. solar cells
B. dry cells
C. nickel-cadmium cells
D. lead-acid batteries
Answer: A

1155. What is the primary function of a fuse in an electrical circuit?

A. To interrupt the flow of current when it exceeds a predetermined safe limit.
B. To control the voltage level in the circuit.
C. To act as a heat sink for the electrical components.
D. To provide a connection point for multiple wires.

Answer: A

1156. Which material is commonly used in a fuse element due to its low melting point and high resistance?

A. Copper
B. Tin
C. Aluminum
D. Steel

Answer:B

1157. What factors influence the current rating of a fuse?

A. Length and diameter of the element
B. Both A and C
C. Material composition of the element
D. Voltage level of the circuit

Answer: B

1158. Which type of fuse is designed for quick response and precise tripping at specific current levels?

A. Time-delay fuse
B. Fast-acting fuse
C. Cartridge fuse
D. Resettable fuse

Answer: B

1159. What is the advantage of a cartridge fuse over a traditional glass fuse?

A. Increased voltage rating
B. Enhanced safety due to enclosed construction
C. Easier visual inspection of the element
D. Lower cost and wider availability

Answer: B

1160. What can cause a fuse to blow prematurely, even at normal current levels?

A. Excessive ambient temperature
B. Both A and C
C. Loose connections or corrosion on the fuse holder
D. Over Tightening of the fuse in the holder

Answer: B

1161. What should you NEVER do after a fuse blows in an electrical circuit?

A. Disconnect the power supply immediately.
B. Check for the cause of the overload before replacing the fuse.
C. Attempt to reset or bypass the fuse.
D. Replace the fuse with a higher-rated one to prevent future blowouts.

Answer: C

1162. Which type of fuse is suitable for household applications due to its affordability and ease of replacement?

A. High-voltage fuse
B. Automotive fuse
C. Liquid-filled fuse
D. Plug fuse

Answer: D

1163. What is the purpose of a time-delay fuse in a motor circuit?

A. Precise tripping under short-circuit conditions.
B. Controlled response to accommodate motor starting current surges.
C. Increased protection against voltage spikes.
D. Faster reaction to protect sensitive electronics.

Answer: B

1164. What does the "interrupting rating" of a fuse indicate?

A. Maximum voltage it can withstand.
B. Maximum fault current it can safely interrupt.
C. Operating temperature range of the element.
D. Current rating under normal operating conditions.

Answer: B

1165. What is the main disadvantage of using resettable fuses compared to traditional fuses?

A. Higher cost and limited availability.
B. Slower response time and potential for overheating.
C. Increased risk of electrical shock due to exposed elements.
D. Difficulty in visually identifying a blown state.

Answer: B

1166. How can you differentiate between a blown cartridge fuse and a good one without removing it from the holder?

A. By visually inspecting the element through the transparent window (if available).
B. Using a continuity tester to check for an open circuit across the fuse.
C. Measuring the voltage drop across the fuse while the circuit is energized.
D. Shaking the holder to listen for rattling sound from the element.

Answer: B

1167. What type of fuse is commonly used in automotive applications due to its compact size and vibration resistance?

A. Blade fuse
B. Microfuse
C. High-rupture capacity fuse
D. Time-lag fuse

Answer: B

1168. What safety precautions should you take when replacing a blown fuse?

A. Wear insulated gloves and safety glasses.
B. Always work on a de-energized circuit.
C. Use a screwdriver or pliers to grip the fuse firmly.
D. Replace the fuse with one of the same rating and type.

Answer: B

1169. Which statement is TRUE about arc quenching in high-voltage fuses?

A. It is not necessary for low-voltage applications.
B. It involves using special materials or chambers to rapidly extinguish the arc formed during overload.
C. It can be achieved by increasing the air gap between the fuse element and the contacts.
D. Arc quenching has no impact on the overall safety of the fuse.

Answer: B

1170. What is the primary function of a fuse indicator in a cartridge fuse?

A. Provide visual confirmation of a blown fuse.
B. Increase the interrupting rating of the fuse.
C. Act as a heat sink for the element.
D. Measure the current flowing through the circuit.

Answer: A

1171. How does a liquid-filled fuse operate differently from a traditional solid-type fuse?

A. It uses a magnetic field to interrupt the current.
B. The liquid expands and extinguishes the arc when overloaded.
C. It has a higher voltage rating due to the insulating properties of the liquid.
D. It provides slower response time for motor circuit protection.

Answer: B

1172. What potential hazard can arise from using an oversized fuse in a circuit?

A. Increased risk of overheating and fire.
B. Reduced protection against short circuits.
C. Difficulty in fitting the fuse into the holder.
D. Improved circuit efficiency due to lower resistance.

Answer: A

1173. What is the purpose of a ferrule (crimp cap) on the end of a fuse wire?

A. Enhance electrical conductivity.
B. Secure the wire connection to the fuse holder.

C. Act as an additional safety barrier against shock hazards.
D. Increase the melting point of the fuse element.

Answer: B

1174. What type of fuse is best suited for protecting sensitive electronic equipment due to its fast response and low fault current interruption capability?

A. High-rupture capacity fuse.
B. Time-delay fuse.
C. Semiconductor fuse.
D. Cartridge fuse.

Answer: C

1175. Which statement accurately describes the relationship between fuse rating and ambient temperature?

A. The higher the ambient temperature, the lower the safe current rating for the fuse.
B. Ambient temperature doesn't affect the fuse rating as long as it's within operating limits.
C. A lower ambient temperature allows for a higher-rated fuse to be used in the circuit.
D. The current rating of a fuse remains constant regardless of the surrounding temperature.

Answer: A

1176. What potential drawback exists when using high-rupture capacity HRC. fuses?

A. They are susceptible to damage from vibration and shock.
B. They require specialized holders due to their larger size.
C. Their fast-acting nature may not offer sufficient protection for motor circuits.
D. They are generally less efficient and generate more heat compared to standard fuses.

Answer: B

1177. What is the primary function of a current-limiting fuse in protecting electrical equipment?

A. To rapidly extinguish the arc formed during overload.
B. To limit the peak current level during a fault event, minimizing damage.
C. To provide overload protection with a longer time delay for motor starting surges.
D. To act as a voltage regulator and stabilize the circuit.

Answer: B

1178. What type of fuse is commonly used in residential and commercial power distribution panels?

A. Blade fuse.
B. Bolt-on fuse.
C. Microfuse.
D. Cartridge fuse.

Answer: B

1179. What safety precautions should be taken when handling and storing spare fuses?

A. Ensure they are properly labeled and stored in a cool, dry place.
B. Test them with a continuity tester before use to verify functionality.
C. Keep them close to electrical panels for easy access in case of a blown fuse.
D. Dispose of used fuses immediately to avoid accidental misuse.

Answer: A

1180. How does the cross-sectional area of a fuse element affect its current rating?

A. A larger area allows for higher current flow before melting.
B. A smaller area provides faster response times to overcurrents.
C. The cross-sectional area has no significant impact on the fuse rating.
D. A larger area increases the overall resistance of the element.

Answer: A

1181. What is the main advantage of using a refill fuse compared to a disposable cartridge fuse?

A. Easier visual inspection of the element for blown status.
B. Reduced cost and environmental impact due to reusable components.
C. Improved safety with enclosed construction and arc quenching mechanisms.
D. Faster tripping times and higher interrupting rating.

Answer: B

1182. What potential risks are associated with using improper or counterfeit fuses?

A. Reduced protection against overcurrents and increased fire hazards.
B. Improved circuit efficiency due to lower resistance.
C. Enhanced compatibility with different types of fuse holders.
D. Extended lifespan and greater durability compared to genuine fuses.

Answer: A

1183. What can be used as a temporary alternative to a blown fuse if no appropriate replacement is available immediately?

A. A higher-rated fuse to prevent future blowouts.
B. A piece of wire or foil, which is highly dangerous and should be avoided.
C. A resettable fuse, if compatible with the circuit and current requirements.
D. Another fuse from a different circuit, even if with different rating.

Answer: B

1184. What is the importance of proper fuse selection and installation in electrical systems?

A. Ensuring optimal circuit protection against overcurrents and potential damage.
B. Matching the aesthetic appearance of the fuse holder for design consistency.
C. Simplifying future replacement by using any readily available fuse.
D. Reducing the overall cost of the electrical installation by choosing inexpensive fuses.

Answer: A

1185. How does the diameter of a fuse element influence its melting point and current rating?

A. A larger diameter increases the melting point and current rating.
B. A smaller diameter offers faster response times but lower current capacity.
C. The diameter has minimal impact on the element's performance.
D. A larger diameter reduces the overall resistance of the fuse.

Answer: A

1186. What material property is crucial for maintaining a fast-acting response time in a fuse element?

A. Low specific heat capacity
B. High electrical conductivity
C. Ductility and malleability
D. Resistance to corrosion

Answer: A

1187. What type of fuse is primarily used for protecting low-voltage circuits in sensitive electronic equipment?

A. Nano-fuse
B. Liquid-filled fuse
C. Time-delay fuse
D. HRC fuse

Answer: A

1188. What is the primary purpose of sand filling in some cartridge fuses?

A. To enhance arc quenching capabilities during overload.
B. To improve heat dissipation from the element.
C. To provide additional mechanical support for the element.
D. To increase the voltage rating of the fuse.

Answer: A

1189. What specialized type of fuse is used for protecting high-voltage power transmission lines?

A. Expulsion fuse
B. Semiconductor fuse
C. Blade fuse
D. Refill fuse

Answer: A

1190. What is the advantage of using a current-limiting fuse with semiconductor technology compared to traditional fuses?

A. Faster response time and lower peak current during fault events.
B. Reduced cost and compatibility with existing fuse holders.
C. Ability to withstand higher voltages and larger fault currents.
D. Improved arc quenching capabilities and visual indication of blown state.

Answer: A

1191. What type of fuse is recommended for protecting motor circuits due to its ability to handle starting current surges?

A. Time-lag fuse
B. Fast-acting fuse
C. High-rupture capacity fuse
D. Liquid-filled fuse

Answer: A

1192. What is the primary function of a fuse link in a high-voltage fuse?

A. To provide mechanical support for the element and connect it to the terminals.
B. To act as a heat sink and improve the element's cooling efficiency.
C. To isolate the arc formed during overload and direct it safely away from the fuse body.
D. To control the voltage drop across the circuit and regulate power flow.

Answer: A

1193. What potential consequences can occur if a fuse is underrated for the circuit it protects?

A. Increased risk of overheating, fire hazards, and circuit damage.
B. Improved efficiency and reduced power consumption due to lower resistance.
C. Faster response time to protect sensitive electronics from overcurrents.
D. Enhanced arc quenching capabilities and fault current interruption.

Answer: A

1194. What is the importance of properly labeling fuses with their current rating and type?

A. Ensuring safe and efficient replacement by choosing the appropriate fuse.
B. Enhancing the aesthetic appearance of the fuse holder and wiring system.
C. Simplifying circuit troubleshooting by identifying potential fuse-related issues.
D. Complying with building codes and electrical safety regulations.

Answer: A

1195. How can the ambient temperature surrounding a fuse affect its current rating?

A. Higher temperatures require a lower current rating for safe operation.
B. Lower temperatures allow for a higher current rating due to improved heat dissipation.
C. Ambient temperature has no significant impact on the fuse rating.
D. Higher temperatures enhance the element's melting point and increase the current capacity.

Answer: A

1196. What factor, apart from current rating, is crucial for choosing the right fuse for a specific application?

A. Voltage rating of the circuit
B. Type of wire used in the circuit
C. Color code of the fuse element
D. Size and dimensions of the fuse holder

Answer: A

1197. For high-voltage fuses, what material is commonly used due to its excellent insulating properties?

A. Porcelain
B. Copper
C. Aluminum
D. PVC

Answer: A

1198. Which type of fuse is well-suited for protecting automotive circuits due to its compact size and vibration resistance?

A. Microfuse
B. Cartridge fuse
C. Bolt-on fuse
D. Time-lag fuse

Answer: A

1199. What potential hazard can occur if a fuse holder is not properly tightened or secured?

A. Increased risk of arcing and electrical shock due to loose connections.
B. Faster response time and improved protection against overcurrents.
C. Enhanced cooling efficiency and lower operating temperature for the fuse.
D. Reduced voltage drop across the circuit and improved power transmission.

Answer: A

1200. What potential consequences can occur if a fuse is underrated for the circuit it protects?

A. Increased risk of overheating, fire hazards, and circuit damage due to delayed tripping.
B. Improved efficiency and reduced power consumption due to lower resistance.
C. Faster response time to protect sensitive electronics from overcurrents.
D. Enhanced arc quenching capabilities and safe interruption of even small fault currents.

Answer: A

1201. What is the primary function of a ferrule (crimp cap) on the end of a fuse wire?

A. Secure the wire connection to the fuse holder.
B. Enhance electrical conductivity.
C. Act as an additional safety barrier against shock hazards.
D. Increase the melting point of the fuse element.

Answer: A

1202. How does the cross-sectional area of a fuse element affect its current rating?

A. A larger area allows for higher current flow before melting.
B. A smaller area offers faster response times to overcurrents.
C. The cross-sectional area has no significant impact on the fuse rating.
D. A larger area increases the overall resistance of the element.

Answer: A

1203. What is the main advantage of using a refill fuse compared to a disposable cartridge fuse?

A. Reduced cost and environmental impact due to reusable components.
B. Easier visual inspection of the element for blown status.
C. Improved safety with enclosed construction and arc quenching mechanisms.
D. Faster tripping times and higher interrupting rating.

Answer: A

1204. What potential risks are associated with using improper or counterfeit fuses?

A. Reduced protection against overcurrents and increased fire hazards.
B. Improved circuit efficiency due to lower resistance.
C. Enhanced compatibility with different types of fuse holders.
D. Extended lifespan and greater durability compared to genuine fuses.

Answer: A

1205. What type of fuse is best suited for protecting power distribution panels in large buildings due to their high current capacity and robust construction?

A. Bolt-on fuse
B. Blade fuse
C. Microfuse
D. Cartridge fuse

Answer: A

1206. What is the primary purpose of sand filling in some high-voltage fuses?

A. To improve heat dissipation from the element.
B. To enhance arc quenching capabilities during overload.
C. To provide additional mechanical support for the element.
D. To increase the voltage rating of the fuse.

Answer: B

1207. How does the diameter of a fuse element influence its melting point and current rating?

A. A larger diameter increases the melting point and current rating.
B. A smaller diameter offers faster response times but lower current capacity.
C. The diameter has minimal impact on the element's performance.
D. A larger diameter reduces the overall resistance of the fuse.

Answer: A

1208. What material property is crucial for maintaining a fast-acting response time in a fuse element?

A. Low specific heat capacity
B. High electrical conductivity
C. Ductility and malleability
D. Resistance to corrosion

Answer: A

1209. What type of fuse is primarily used for protecting low-voltage circuits in sensitive electronic equipment?

A. Nano-fuse
B. Liquid-filled fuse
C. Time-delay fuse
D. HRC fuse

Answer: A

1210. What is the advantage of using a current-limiting fuse with semiconductor technology compared to traditional fuses?

A. Faster response time and lower peak current during fault events.
B. Reduced cost and compatibility with existing fuse holders.
C. Ability to withstand higher voltages and larger fault currents.
D. Improved arc quenching capabilities and visual indication of blown state.

Answer: A

1211. What type of fuse is recommended for protecting motor circuits due to its ability to handle starting current surges?

A. Time-lag fuse
B. Fast-acting fuse
C. High-rupture capacity fuse
D. Liquid-filled fuse

Answer: A

1212. What is the importance of properly labeling fuses with their current rating and type?

A. Ensuring safe and efficient replacement by choosing the appropriate fuse.
B. Enhancing the aesthetic appearance of the fuse holder and wiring system.
C. Simplifying circuit troubleshooting by identifying potential fuse-related issues.
D. Complying with building codes and electrical safety regulations.

Answer: A

1213. What potential consequences can occur if a fuse holder is not properly tightened or secured?

A. Increased risk of arcing and electrical shock due to loose connections.
B. Faster response time and improved protection against overcurrents.
C. Enhanced cooling efficiency and lower operating temperature for the fuse.
D. Reduced voltage drop across the circuit and improved power transmission.

Answer: A

1214. How can the ambient temperature surrounding a fuse affect its current rating?

A. Higher temperatures require a lower current rating for safe operation.
B. Lower temperatures allow for a higher current rating due to improved heat dissipation.
C. Ambient temperature has no significant impact on the fuse rating.
D. Higher temperatures enhance the element's melting point and increase the current capacity.

Answer: A

1215. What factor, apart from current rating, is crucial for choosing the right fuse for a specific application?

A. Voltage rating of the circuit
B. Type of wire used in the circuit
C. Color code of the fuse element
D. Size and dimensions of the fuse holder

Answer: A

1216. What material is commonly used in high-voltage fuses due to its excellent insulating properties?

A. Porcelain
B. Copper
C. Aluminum
D. PVC

Answer: A

1217. Which type of fuse is well-suited for protecting automotive circuits due to its compact size and vibration resistance?

A. Microfuse
B. Cartridge fuse
C. Bolt-on fuse
D. Time-lag fuse

Answer: A

1218. What is the primary function of a fuse indicator window on a cartridge fuse?

A. Easier and safer identification of a blown fuse without removing the holder.
B. Enhanced arc quenching capabilities and reduced fault current interruption.
C. Improved current rating due to increased heat dissipation.
D. More accurate measurement of the voltage drop across the circuit.

Answer: A

1219. What potential hazard can occur if a fuse is oversized for the circuit it protects?

A. Higher risk of overheating, fire hazards, and circuit damage due to delayed tripping.
B. Increased protection against short circuits and electrical surges.
C. Faster response time and improved efficiency for sensitive electronic components.
D. Enhanced arc quenching and safe interruption of even small fault currents.

Answer: A

1220. What type of fuse is primarily used in residential appliance circuits due to its affordability and ease of replacement?

A. Blade fuse
B. Microfuse
C. Cartridge fuse
D. High-rupture capacity fuse

Answer: A

1221. What characteristic makes a ceramic fuse element suitable for high-voltage applications?

A. High melting point and excellent heat resistance
B. Low specific heat capacity and fast response time
C. Ductility and malleability for easy installation
D. High electrical conductivity and reduced voltage drop

Answer: A

1222. What safety precautions should be taken when working with high-voltage fuses?

A. Wear insulated gloves, safety glasses, and follow proper lockout/tagout procedures.
B. Use a screwdriver or pliers to grip the fuse firmly for better leverage.
C. Test the fuse with a continuity tester before handling it to verify functionality.
D. Replace the fuse with one of the same rating and type regardless of the circuit requirements.

Answer: A

1223. Which type of fuse is not recommended for motor circuits due to its fast-acting response time?

A. Fast-acting fuse
B. Time-lag fuse
C. Liquid-filled fuse
D. Cartridge fuse

Answer: A

1224. How can choosing the right fuse size and type enhance the operational efficiency of a circuit?

A. Minimizes heat generation and power losses, improving overall energy efficiency.
B. Allows for higher operating temperatures, leading to increased circuit capacity.
C. Simplifies circuit troubleshooting and maintenance procedures.
D. Provides additional aesthetic appeal due to the variety of fuse designs available.

Answer: A

1225. What type of fuse is recommended for protecting sensitive electronic circuits due to its low breaking capacity and precise tripping characteristics?

A. Semiconductor fuse
B. Liquid-filled fuse
C. High-rupture capacity fuse
D. Cartridge fuse

Answer: A

1226. What factor is not considered when assigning a color code to a fuse?

A. Current rating of the fuse.
B. Type of fuse element (e.g., copper, silver)
C. Voltage rating of the fuse
D. Intended application (e.g., motor circuit, electronics)

Answer: A

1227. What potential consequence can occur if a time-lag fuse is used in a circuit not designed for its delayed tripping characteristic?

A. Increased risk of overheating, fire hazards, and circuit damage due to delayed response to overcurrents.
B. Enhanced arc quenching capabilities and safe interruption of high-energy faults.
C. Improved efficiency for circuits with frequent starting current surges.
D. Faster response time and better protection for sensitive electronic components.

Answer: A

1228. What maintenance practice is recommended for ensuring safe and reliable operation of high-voltage fuses?

A. Regular visual inspection for signs of damage, cracks, or loose connections.
B. Testing the fuse with a continuity tester to verify its functionality at regular intervals.
C. Replacing the fuse at pre-determined intervals regardless of its condition.
D. Leaving the fuse untouched unless a fault occurs in the circuit.

Answer: A

1229. What advantage does a liquid-filled fuse offer compared to a traditional cartridge fuse?

A. Improved heat dissipation and faster response time due to liquid convection.
B. Enhanced arc quenching capabilities due to the enclosed liquid chamber.
C. Increased voltage rating and suitability for high-voltage applications.
D. Reduced cost and ease of replacement compared to more complex designs.

Answer: A

1230. What characteristic makes a high-rupture capacity (HRC. fuse suitable for protecting large industrial equipment?

A. Ability to safely interrupt high-energy fault currents due to robust construction.
B. Low current rating and fast response time for sensitive electronic circuits.
C. Compact size and ease of installation in small spaces.
D. Visual indicator window for easy identification of a blown fuse.

Answer: A

1231. How does the construction of a time-lag fuse element differ from a fast-acting fuse element?

A. Time-lag elements have additional thermal mass or specific heating elements to create a delay.
B. They are made from different materials with varying melting points and thermal conductivities.
C. Time-lag elements are physically larger than fast-acting ones.
D. Their construction has minimal impact on the tripping characteristics.

Answer: A

1232. What potential benefit can be obtained by using a resettable fuse compared to a traditional fuse?

A. Increased sustainability and reduced waste due to reusability.
B. Faster response time and enhanced arc quenching capabilities.
C. Improved compatibility with existing fuse holders and circuits.
D. Higher current rating and suitability for heavy-duty applications.

Answer: A

1233. What safety precautions should be taken when replacing a blown fuse?

A. Turn off the power source, wear proper safety gear, and follow lockout/tagout procedures.
B. Use a screwdriver or pliers to grip the fuse firmly for better leverage.
C. Test the new fuse with a continuity tester before installing it.
D. Replace the fuse with one of the same size and color regardless of the circuit requirements.

Answer: A

1234. What is the primary function of a fuse link in a low-voltage cartridge fuse?

A. Provide mechanical support for the element and connect it to the terminals.
B. Act as a heat sink and improve the element's cooling efficiency.
C. Isolate the arc formed during overload and direct it safely away from the fuse body.
D. Control the voltage drop across the circuit and regulate power flow.

Answer: A

1235. What type of fuse is recommended for protecting circuits in hazardous environments due to its spark-resistant design?

A. Intrinsic safety fuse
B. Time-lag fuse
C. High-rupture capacity fuse
D. Liquid-filled fuse

Answer: A

1236. What potential benefit can be gained by using a visual indicator window on a high-voltage fuse compared to a solid body design?

A. Easier and safer identification of a blown fuse without removing the holder.
B. Enhanced arc quenching capabilities due to increased ventilation.
C. Improved current rating and ability to handle higher loads.
D. Reduced cost and simplified fuse replacement procedures.

Answer: A

1237. How can selecting the appropriate fuse holder material impact the safety and performance of the circuit?

A. Choosing a material with suitable insulating properties and heat resistance can prevent electrical hazards and overheating.
B. A larger holder size allows for easier installation and handling of the fuse.
C. Matching the holder's material to the type of fuse element has minimal impact on

performance.
D. Any type of holder will suffice as long as it physically accommodates the fuse.

Answer: A

1238. What potential consequence can occur if a fuse is used in a circuit exceeding its voltage rating?

A. Increased risk of electrical breakdown and arcing due to exceeding the insulation limits.
B. Faster response time and improved protection against overcurrents.
C. Enhanced arc quenching capabilities and safe interruption of high-energy faults.
D. Improved heat dissipation and extended lifespan of the fuse element.

Answer: A

1239. How does the cross-sectional area of a fuse wire affect its melting point and current rating?

A. A larger area increases the melting point and allows for a higher current rating.
B. A smaller area offers faster response times but lower current capacity.
C. The cross-sectional area has minimal impact on the element's performance.
D. A larger area reduces the overall resistance of the wire.

Answer: A

1240. What potential consequence can occur if a fuse holder is corroded or damaged?

A. Increased risk of arcing and electrical hazards due to poor connections.
B. Improved heat dissipation and longer lifespan of the fuse element.
C. Enhanced arc quenching capabilities and safe interruption of fault currents.
D. Faster response time and improved protection against overcurrents.

Answer: A

1241. What is the advantage of using a refill fuse compared to a disposable cartridge fuse?

A. Reduced cost and environmental impact due to reusable components.
B. Easier visual inspection of the element for blown status.
C. Improved safety with enclosed construction and arc quenching mechanisms.
D. Faster tripping times and higher interrupting rating.

Answer: A

1242. What potential risks are associated with using improper or counterfeit fuses?

A. Improved circuit efficiency due to lower resistance.
B. Reduced protection against overcurrents and increased fire hazards.
C. Enhanced compatibility with different types of fuse holders.
D. Extended lifespan and greater durability compared to genuine fuses.

Answer: B

1243. What type of fuse is primarily used for protecting power distribution panels in large buildings due to their high current capacity and robust construction?

A. Microfuse
B. Blade fuse
C. Bolt-on fuse
D. Cartridge fuse

Answer: C

1244. How can improper selection or installation of a fuse impact the performance and safety of a circuit?

A. Using an incorrect fuse rating or exceeding its voltage limit can lead to overheating, fire hazards, and electrical breakdown.
B. A slightly larger fuse size may offer increased protection without negatively affecting the circuit.
C. Incorrect installation methods like loose connections have minimal impact on fuse performance.
D. Installing a fuse in the wrong orientation disrupts circuit flow but poses no safety risks.

Answer: A

1245. What is the primary purpose of sand filling in some high-voltage fuses?

A. To improve heat dissipation from the element.
B. To enhance arc quenching capabilities during overload and suppress potential arcs.
C. To provide additional mechanical support for the element.
D. To increase the voltage rating of the fuse.

Answer: B

1246. What characteristic makes a ceramic fuse element suitable for high-voltage applications?

A. Low specific heat capacity and fast response time
B. Ductility and malleability for easy installation
C. High electrical conductivity and reduced voltage drop
D. High melting point and excellent heat resistance

Answer: D

1247. What potential consequence can occur if a time-lag fuse is used in a circuit not designed for its delayed tripping characteristic?

A. Enhanced arc quenching capabilities and safe interruption of high-energy faults.
B. Improved efficiency for circuits with frequent starting current surges.

C. Increased risk of overheating, fire hazards, and circuit damage due to delayed response to overcurrents.
D. Faster response time and better protection for sensitive electronic components.

Answer: C

1248. What type of fuse is not recommended for motor circuits due to its fast-acting response time?

A. Fast-acting fuse
B. Time-lag fuse
C. Liquid-filled fuse
D. Cartridge fuse

Answer: A

1249. What potential benefits can be obtained by choosing a high-rupture capacity (HRC. fuse for industrial applications?

A. Enhanced efficiency and lower heat generation in circuits.
B. Reduced cost and wider compatibility with different fuse holders.
C. Faster response time and improved protection for sensitive electronic components.
D. Safe interruption of high-energy fault currents due to robust construction and arc quenching mechanisms.

Answer: D

1250. How can using a resettable fuse benefit the environment compared to traditional disposable fuses?

A. Enhanced arc quenching capabilities and improved safety during fuse replacement.
B. Simpler installation and compatibility with existing fuse holders.
C. Reduced waste and environmental impact due to reusability.
D. Faster response time and better protection against overcurrents.

Answer: C

1251. What safety precautions should be taken when testing a fuse with a continuity tester?

A. Grip the fuse firmly with your bare hands for improved conductivity.
B. Use the tester while the fuse is installed in the circuit for a more accurate reading.
C. Ensure the circuit is de-energized and follow lockout/tagout procedures before any testing.
D. Replace the fuse immediately if the continuity tester indicates a fault.

Answer: C

1252. What information is typically found on the marking of a cartridge fuse?

A. Circuit diagram and recommended replacement procedures.
B. Current rating, voltage rating, type of element, and manufacturer's logo.
C. Serial number and date of production for traceability.
D. Expiry date and instructions for safe disposal.

Answer: B

1253. What type of fuse is primarily used in residential appliance circuits due to its affordability and ease of replacement?

A. Microfuse
B. Cartridge fuse
C. Blade fuse
D. Bolt-on fuse

Answer: C

1254. What are the objectives of earthing?

A. It provides a path for discharging and de-energizing equipment to carry out maintenance on the equipment
B. protection of human and animals life by controlling touch and step voltage to safer values
C. It is used to provide zero potential surface
D. all of the above
Ans.: D

1255. The process of connecting the metallic frame of electrical equipment or some electrical part of the system to earth is called____.

A. Grounding or earthing
B. earth resistance
C. resistance of the earth electrode
D. any of the above
Ans.: A

1256. The resistance of earth should be ____.

A. low
B. high
C. the minimum possible
D. infinite
Ans.: C

1257. The safety of electrical equipment and wiring is ensured by which of the following?

A. earthing
B. providing a fuse
C. insulation

D. All of the above
Ans.: D

1258. When moisture falls below _____, resistivity of earth increase sharply.
A. 20%
B. 40%
C. 50%
D. 10%
Ans.: A

1259. Earth electrodes can be in the form of ____.
A. pipe, plate
B. strip
C. wire
D. all of the above
Ans.: D

1260. Earthing is necessary to give protection against____.
A. Electric shock
B. voltage fluctuation
C. over loading
D. none of the above
Ans.: A

1261. The earth wire should not be size than
A.20 SWG
B. 10 SWG
C. 25 SWG
D. 5 SWG
Ans.: B

1262. The earth wire should be of ____.
A. mechanically strong
B. good conductor of electricity
C. mechanically strong
D. A and B
Ans.: D

1263. On what basis the size of the earth wire is determine?
A. current carrying capacity of line
B. voltage of the service line
C. Symmetrical fault
D. any of the above

Ans.: A

1264. For domestic wiring, the minimum size of wire should be not less than

A. 10 SWG
B. 14SWG
C. 20SWG
D. 25 SWG
Ans.: B

1265. Earth wire is made up of__.

A. Copper
B. Aluminium
C. Galvanized steel
D. Silver
Ans.: C

1266. The earth potential is taken as___.

A. high
B. low
C. infinite
D. zero
Ans.: D

1267. _____ site will be preferred for earthing.

A. dry and rocky
B. damp and wet sand pit
C. clayey soil
D. wet mashy ground
Ans.: D

1268. which of the following is least preferred for earthing?

A. earth mixed with salt and charcoal
B. dry earth
C. clayey soil
D. all of the above
Ans.: B

1269. The minimum current a human can feel is approximately equal to __.

A. 5 mA
B. 1 mA
C. 10 mA
D. 15 mA
Ans.: B

1270. The perception of electric shock can be depends on the___.

A. magnitude of the voltage, frequency
B. duration of flow of current
C. current, path taken
D. All of the above
Ans.: D

1271. The effect of an electric shock is/are___.

A. cause death
B. skin burns
C. Neurological effect
D. All of the above
Ans.: D

1272. Death caused by an electric shock is known as___.

A. Neurological effect
B.Electrocution
C. Ash-flash hazards
D. none of the above
Ans.: B

1273. ___ can occur if a human's body comes in contact with any source of voltage enough high to force a sufficient current through the body.

A. electric hazards
B. electric shock
C. Earthing
D. None of the above
Ans.: B

1274. The resistance of the earth should be maintained__ for domestic installation.

A. 1 Ohm
B. 3 Ohm
C. 5 Ohm
D. 10 Ohm
Ans.: C

1275. Q.22 ____ color of wire is used for earthing.

A. Red
B. Blue
C. Black
D. Green
Ans.: D

1276. Disadvantages of earthing.

A. Very expensive due to the provision of a complete system of protective conductors, earth electrodes etc.

B. Possible safety hazard

C. Both A and B

D. none of the above

Ans.: C

1277. A conductor which connects a part of an electrical installation, exposed conductive part to a earth electrode is known as___.

A. Earthing conductor

B. Earthing plate

C. Earth electrode

D. any of the above

Ans.: A

1278. _____ is the voltage occurring between the earthing system and reference earth at a given value of earth current flowing through earthing system.

A. Earth electrode

B. Earth voltage or earth potential

C. Earth resistivity

D. None of the above

Ans.: B

1279. Earth surface potential is the voltage between a point x on theearth's surface and__.

A. Earth resistance

B. Earth potential

C. Reference earth

D. any af the above

Ans.: C

1280. ____ is the resistance, measured between two opposite faces.

A. Earth potential

B. Earth resistance

C. Earth resistivity or specific earth resistance

D. all of the above

Ans.: C

1281. If moisture of earth is increases then earth resistance is ___.

A. Decrease

B. Increases

C. cannot changes

D. none of the above
Ans.: D

1282. While designing Ground resistance which of the following is considered?
A. Ground resistance should be as high as possible
B. Ground resistance should be as low as possible
C. ground resistance should be zero
D. none of the above
Ans.: B

1283. Average resistance of human
A. 1000 Ohms
B. 5000 ohms
C. 10 ohms
D. 100 ohms
Ans.: A

1284. What is earth current?
A. The current dissipated by the earth electrode into the ground
B. the current at time of earth fault
C. the current at which the protective system operated
D. all of the above
Ans.: A

1285. The current range of 1.6 mA, do not impain the person ability. It is also known as___.
A. Fault current
B. Let go current
C. normal current
D. none of the above
Ans.: B

1286. The body can tolerate _____ direct current than alternating current at 50 Hz.
A. lower
B. same
C. higher
D. can't decide
Ans.: C

1287. The current higher than ____ , dangerous for human body.
A. 10 mA
B. 20 mA

C. 100 mA
D. 60 mA
Ans.: D

1288. The current range of ____ , may be painful and affect person ability.
A. 10-15 mA
B. 9-25 mA
C. 50-60 mA
D. 100-150 mA
Ans.: B

1289. The permissible current and duration should be less tha that required for ventricular fibrillation of the heart and is calculated by the following equation for up to 3 sec. (Person of 50 kg)
A. $I_B = 0.116/\sqrt{t}$
B. $I_B = 1.16/\sqrt{t}$
C. $I_B = 116/\sqrt{t}$
D. $I_B = 11.6/\sqrt{t}$
Ans.: A

1290. The lower the resistivity___ the earthing resistance.
A. higher
B. lower
C. cannot change
D. none of the above
Ans.: B

1291. Earthing of more than one point is used in ___ and higher voltage system.
A. 32 kV
B. 66 kV
C. 220 kV
D. 132 kV
Ans.: C

1292. A coil type electrode, a coil of GI wire of ___ size is made.
A. 5 SWG
B. 14 SWG
C.15 SWG
D. 8 SWG
Ans.: D

1293. Resistivity of concrete becomes approximately equal to _____ Ωcm at 20ºC under the ground which is less than the average earth resistivity.

A. 5000
B. 1000
C. 3000
D. 2500
Ans.: C

1294. Cross section area or the earthing lead should not be ____of the main conductor.

A. more than
B. less than half
C. equal
D. none of the above
Ans.: B

1295. The earth conductor which connects the main switch board to the distribution board is called as___.

A. main earthing conductor
B. sub earthing conductor
C. Earthing leads
D. any of the above
Ans.: B

1296. The earth wire which is run from the distribution board to different switch boards is called as the___.

A. Earth electrode
B. main earthing conductor
C. Earth continuity conductor
D. all of the above
Ans.: C

1297. The size of the earth continuity conductor should not be less than__.

A. 14 SWG (2.894 mm^2)
B. 28 SWG
C. 15 SWG
D. 8 SWG
Ans.: A

1298. The maximum permissible value of earth resistance for small substation is __.

A. 5 ohms
B. 10 ohms
C. 20 ohms
D. 100 ohms

Ans.: A

1299. In plate earthing, the size of copper plate _____ is used.
A. 300 mm x 300 mm x 3 mm
B. 100 mm x100 mm x 1 mm
C. 600 mm x 600 mm x 3 mm
D. 200 mm x 200 mm x 2 mm
Ans.: C

1300. In plate earthing, the size of Aluminium plate _____ is used.
A. 600 mm x 600 mm x 6 mm
B. 200 mm x 200 mm x 2 mm
C. 600 mm x 600 mm x 3 mm
D. 600 mm x 600 mm x 30 mm
Ans.: A

1301. In plate earthing, the plate is buried vertically in the ground at the depth of ___.
A. not less than 1.5m
B. not less than 3m
C. not less than 1m
D. not less than 0.5m
Ans.: B

1302. Alternate layer of _____ and ____ each 150 cm thick are kept around plate of the plate earthing method.
A. charcoal, soil
B. charcoal, concrete
C. charcoal, salt
D. any of the above
Ans.: C

1303. In plate earthing, four to five bucket of water is poured at the regular of few days. This is because of__.
A. to increase earth resistance
B. to reduced earth resistance
C. to increase earth potential
D. to decrease earth potential
Ans.: B

1304. The plate earthing system is employed for the _____ and the _____ where there is possibility of more fault.
A. generator, substation
B. substation, transmission line

C. transmission line, big power stations
D. transmission line, small power station
Ans.: D

1305. In pipe earthing, _____ pipe is used.
A. galvanized iron
B. aluminium
C. iron
D. any of the above
Ans.: A

1306. The size of the galvanized iron pipe used in pipe earthing methods.
A. 25 mm diameter and 1 to 1.5 m long
B. 38 mm diameter and 2 to 2.5 m long
C. 10 mm diameter and 1 to 2 m long
D. 50 mm diameter and 2 to 2.5 m long
Ans.: B

1307. A pit of size _____ made of concrete and 12.5 cm thick is constructed above the end of pipe in pipe earthing method.
A. 30 mm x 30 mm x 30 mm
B. 40 mm x 40 mm x 40 mm
C. 50 mm x 50 mm x 50 mm
D. any of the above
Ans.: A

1308. A pipe earthing method of earthing is employed in ____ and _____ where there is possibility of comparatively small fault current.
A. large power station, small sub station
B. small power stations, sub stations
C. transmission line, large power station
D. Generating station, large power station
Ans.: B

1309. Small holes of _____ diameter are drilled at the spacing of __ in pipe earthing.
A. 10mm, 10 cm
B. 12 mm, 12 mm
C. 12 mm, 15cm
D. 12cm, 15mm
Ans.: C

1310. Plate and pipe earthing are used where the soil is ____.
A. comparatively soft

B. soil may be sandy
C. rocky
D. any of the above
Ans.: A

1311. In coil earthing method, alternate layer of charcoal and salt each ___ thick are provided around the coil.
A. 150mm
B. 300mm
C. 450mm
D. 600mm
Ans.: B

1312. Coil earthing is employed for the earthing of the ___.
A. distribution substation
B. Intermediate substation
C. Transmission line
D. distribution poles
Ans.: D

1313. Special earthing methods are employed for land is like sandy, rock ect.
A. method of earthing in sandy bed
B. method of earthing in rocky bed
C. method of earthing of extra high voltage system
D. all of the above
Ans.: D

1314. Plate earthing and pipe earthing are used where the soil is___.
A. Comparatively rocky
B. Comparatively soft
C. comparatively sandy
D. all of the above
Ans.: B

1315. The value of the earth resistance decreases as the electrodes are connected in__.
A. series
B. parallel
C. series-parallel
D. none of the above
Ans.: B

1316. The value of earth resistance is _____ to the square of the distance.
A. directly proportional

B. inversely proportional
C. not defined
D. none of the above
Ans.: B

1317. As the distance from the electrode increase, the earth resistance___
A. increases
B. decrease
C. cannot change
D. none of the above
Ans.: B

1318. Earth resistance should be _____ when the capacity of the equipment is ___.
A. more, more
B. less, less
C. more, less
D. less, more
Ans.: D

1319. Which of the following is correct as the maximum permissible earthing resistance for different installation as per Indian electricity rules.
A. small substation = 2.00 ohms
B. Domestic installation = 8.00 ohms
C. big power station or substation = 1.00 ohms
D. all of the above
Ans.: D

1320. Which of the following factors increase the earth resistance?
A. reduced amount of moisture in soil
B. rust between joints
C. loose connections
D. all of the above
Ans.: D

1321. Less contact is made when the connection is loose so the ____.
A. resistance decreases
B. moisture increases
C. resistance increases
D. Temperature of the contact increases
Ans.: C

1322. Rust is developed at the joint due to___.
A. the moisture in the atmosphere

B. if the plate or rod buried in earth
C. due to loose contact
D. Both A and B
Ans.: D

1323. The earth resistance in summer season as compared to monsoon season is__.
A. more
B. less
C. equal in both the season
D. Cant defined
Ans.: A

1324. which of the following methods are used to measure the earth resistance?
A. Voltmeter-ammeter method
B. Earth loop tester and earth tester method
C. ohm meter method
D. all of the above
Ans.: D

1325. Earth tester is an instrument to measure __.
A. high resistance
B. low resistance
C. medium resistance
D. extra high resistance
Ans.: B

1326. ____ is used to measure earth loop resistance between the substation and place of use.
A. voltmeter-ammeter method
B. Ohms meter method
C. Loop tester method
D. none of the above
Ans.: C

1327. Many times static electric charges are produced due to friction between the two rotating parts which produces potential difference between these two parts. These two are joined by a flexible conductor is called as___.
A. Grounding
B. welding
C. bonding
D. soldering
Ans.: C

1328. Earthing of the following parts should be done in substation and generating station:

A. Metal framework not related to power system such as steel structure
B. Equipments related to each system such as framework, non conducting parts
C. Neutral point of systems of different voltages
D. all of the above
Ans.: D

1329. _____ and ____ mechanism should be earthed through separate branch.

A. Circuit breaker, earth switch
B. Isolators, circuit breaker
C. Isolators, earth switch
D. Relay, earth switch
Ans.: C

1330. The poles of the transmission line are kept in ground their earthing is automatically done, even though a separate earthing has to be made when the ____.

A. soil has less resistivity
B. soil has more resistivity
C. Soil has high conductivity
D. none of the above
Ans.: B

1331. Earth wire of the overhead line should be earthed at every ____ distance by preparing independent earth pit.

A. 10 km
B.5.5 km
C. 6.5 km
D. 15 km
Ans.: C

1332. Earth wire of the over head line gives protection against ___also.

A. Earth fault
B. line to line fault
C. breakdown of conductor
D. lightening
Ans.: D

1333. Earthing of neutral in power system can be provided by which of the following?

A. solid earthing and transformer earthing
B. resistance and reactance earthing
C. Peterson coil or suppression coil earthing
D. all of the above
Ans.: D

1334. Solid earthing system is employed up to___.

A. 11 kV
B. 33 kV
C. 66 kV
D. 132 kV
Ans.: B

1335. The resistance earthing method is used for the system having voltages of ____ and the capacity of power source is more than___.

A. 2.2 kV to 33 kV, 5 MVA
B. 22 kV to 33 kV, 10 MVA
C. 33 kV to 66 kV, 5 MVA
D. 132 kV to 400 kV, 500 MVA
Ans.: A

1336. Reactance earthing method can be employed where the value of the _____ is more.

A. Fault current
B. Charging current
C. Earth fault current
D. leakage current
Ans.: B

1337. In ____ type earthing system the other healthy phases can supply power when a ground fault occurs on one phase.

A. reactance earthing
B. Resistance earthing
C. Peterson coil
D. any of the above
Ans.: C

1338. Peterson coil is also called as__.

A. Arc suppression coil
B. ground fault neutralizer
C. Both A and B
D. None of the above
Ans.: C

1339. The grounding obtain by Peterson coil is called as___.

A. resonant grounding
B. neutral grounding
C. system grounding
D. all of the above
Ans.: A

1340. In which type of earthing system tapings are provided so if there is change in the length of the line or in the capacitance of the line, the value of inductance can be adjusted with the help of taping?

A. reactance earthing method
B. Resistance earthing method
C. Peterson or arc suppression method
D. Solid earthing method
Ans.: C

1341. Neutral is not available when system is___.

A. star connected
B. delta connected
C. star-delta
D. none of the above
Ans.: B

1342. IF we double the radius of an electrode, the resistance would decreases only by __.

A. 20 %
B. 30 %
C. 10 %
D. 25 %
Ans.: C

1343. Which of the following is/are correct regarding soil resistivity?

A. Rock = 1000- 1000 ohm-m
B. Ice = 10000 – 100000 ohm-m
C. Sea water = 0.1 – 10 ohm-m
D. all of the above
Ans.: D

1344. soil resistivity is expressed in___.

A. Ohm-meter
B. Ohm/ meter
C. Ohm
D. meter/ohm
Ans.: A

1345. The two main factors which influence the soil resistivity value are the ___and ____.

A. porosity of the material
B. the water content
C. type of electrodes
D. Both A and B
Ans.: D

1346. The ____ and _____ have an important influence on the soil resistivity and hence on the performance of earthing system.

A. Temperature
B. Water content
C. Both A and B
D. none of the above
Ans.: C

1347. Why is it necessary to install the electrodes beneath the freezing line?

A. Ice has very high resistivity as compared to water
B. Ice has very low resistivity as compared to water
C. Ice and water are same resistivity
D. Any of the above
Ans.: A

1348. The water content varies with seasonally and likely to cause variation in the_____.

A. Temperature of earth
B. Electrode conductivity
C. resistance of earthing system
D. all of the above
Ans.: C

1349. Which of the following is/are correct formula for calculation of soil resistivity?

A. $\rho = л\ AR$
B. $\rho = 2AR$
C. $\rho = 2лR$
D. $\rho = 2лAR$
[ρ = average soil resistivity in ohm-cm, A= distance between the electrode, R= the measured resistance value in ohm]
Ans.: D

1350. _____ in the water further reduced the resistivity of earthing particular where there are naturally occurring and do not dilute with time.

A. Dissolve minerals
B. salt
C. Both A and B
D. None of the above
Ans.: C

1351. If the working voltage of the transmission line is very high, the magnitude of earth fault current is also___.

A. very low
B. very high

C. depend on soil
D. all of the above
Ans.: B

1352. The size of the conductor must be chosen in such a way that it can withstand the_____ produced by earth fault current until the protective relay comes into action and isolates the faulty portion of the system.
A. high resistance
B. high earth fault current
C. high temperature
D. high voltage
Ans.: C

1353. Which of the following is correct for the minimum cross sectional area of the earth conductor?
A. $A = I_{fault}/C\ mm^2$
B. $A = I_{fault}\sqrt{t}\ mm^2$
C. $A = \sqrt{t}/C\ mm^2$
D. $A = I_{fault}\sqrt{t}/C\ mm^2$
Ans.: D
[A = minimum area of conductor required, t = time in second which is required for the operation of the C.B, C = constant whose value depends upon the nature of material]

1354. The melting point of aluminium is ____ than copper.
A. higher
B. less
C. equal
D. none of the above
Ans.: B

1355. The ___ is defined as the potential difference between two steps of a person standing on the ground with feet apart during the flow of earth fault current.
A. Earth resistivity
B. Earth resistance
C. Electrode resistance
D. Step potential
Ans.: D

1356. ___ consists of large number of rods which are connected through the copper conductor.
A. Earthing mat
B. Earthing wire/ conductor
C. Earthing electrode

D. All of the above
Ans.: A

1357. The material used for the grounding conductor should have ____ and ___.
A. low conductivity, low underground corrosion
B. high conductivity, high underground corrosion
C. high conductivity, low underground corrosion
D. low conductivity, high underground corrosion
Ans.: C

1358. The modern trend is towards the use of ___in place of copper for the material use for grounding.
A. steel
B. Aluminium
C. tungsten
D. all of the above
Ans.: A

1359. Which of the following information is necessary to obtain for design of substation earthing grid for substation?
A. maximum earth fault current, fault clearing time
B. Area covered by the substation
C. Resistivity of the soil at the sub-station site
D. All of the above
Ans.: D

1360. The degree of protection provided by a grounding system under lightning discharge conditions depends upon its _____ rather than on power frequency impedance.
A. Resistance
B. impulse impedance
C.reactance
D.all of the above
Ans.: B

1361. What is impulse impedance?
A. The impedance under normal conditions
B. The impedance under impulse conditions
C. The impulse under transient conditions
D. All of the above
Ans.: B

1362. The impulse impedance is always ____ than its power frequency impedance.

A. lower
B. higher
C. equal
D. any of the above
Ans.: B

1363. Resistivity of water depends on the ___ and ____ of salt dissolved in it.

A. amount, nature
B. temperature, nature
C. purity, nature
D. none of the above
Ans.: A

1364. Pure water is poor conductor of_____.

A. temperature
B. sound
C. electricity
D. all of the above
Ans.: C

1365. Which of the following is/are correct for effect of current flowing through human body?

A. Below 1 mA = nothing
B. 11 to 25 mA = painful shock with muscle contraction after medical treatment they can restore
C. Above 150 mA = cardiac arrest, body starts burning resulting into death
D. All of the above
Ans.: D

1366. Current flows from earthing grid during ____ creating potential difference.

A. operation and working
B. faults
C. lighting
D. all of the above
Ans.: D

1367. Impulse performance of earthing system depends on which of the following factors?

A. Electrical soil properties
B. ground electrode geometry
C. current waveform properties
D. all of the above
Ans.: D

1368. Tower footing resistance should be below ___.

A. 10 Ω
B. 50 Ω
C. 40 Ω
D. 20 Ω
Ans.: A

1369. Material used for tower footing can be____.

A. iron clad
B. copper plates
C. Both A and B
D. tungsten
Ans.: C

1370. ____ is very good in improving or increasing the conductivity of soil as compared to others.

A. Sea water
B. pure water
C. Common salt
D. Drinking water
Ans.: C

1371. A human body can tolerate a current slightly higher than ___.

A. 10 Hz
B. 5 Hz
C. 15 Hz
D. 25 Hz
Ans.: D

1372. If the depth of the earth electrode increases, the value of ground resistance can be____.

A. increases
B. minimized
C.does not depend on the depth of electrode
D.none of the above
Ans.: B

1373. Which of the following common paths for current to flow through the body?

A. Hand to foot
B. Hand to hand through the chest
C. Foot to foot
D. all of the above

Ans.: D

i) <u>Substations at RWF</u>

1374. What is the primary function of a substation at the Rail Wheel Factory?
A) To manufacture rail wheels
B) To convert and distribute electrical power
C) To store raw materials
D) To assemble train components
Answer: B) To convert and distribute electrical power

1375. Which voltage is typically supplied to the Rail Wheel Factory's MRS substation?
A) 11 kV
B) 66 kV
C) 110 kV
D) 220 kV
Answer: B) 66 kV

1376. What type of power is primarily used in the Rail Wheel Factory's substation?
A) Direct Current (DC)
B) Alternating Current (AC)
C) Both AC and DC
D) None
Answer: B) Alternating Current (AC)

1377. Which transformer configuration is commonly used in the Rail Wheel Factory's substation?
A) Delta-Delta
B) Star-Delta
C) Delta-Star
D) Star-Star
Answer: C) Delta-Star

1378. What is the purpose of a circuit breaker in the substation?
A) To measure voltage
B) To interrupt fault currents
C) To regulate power flow
D) To convert AC to DC
Answer: B) To interrupt fault currents

1379. Which device is used to isolate sections of the circuit for maintenance?
A) Circuit Breaker
B) Isolator
C) Transformer
D) Busbar
Answer: B) Isolator

1380. What type of busbar arrangement is typically employed in the Rail Wheel Factory's substation?
A) Single Busbar
B) Double Busbar
C) Main and Transfer Busbar
D) Ring Busbar
Answer: C) Main and Transfer Busbar

1381. Which protection device is used to detect and isolate faults in the system?
A) Fuse
B) Relay
C) Circuit Breaker
D) Isolator
Answer: B) Relay

1382. What is the function of a lightning arrester in the substation?
A) To measure current
B) To protect equipment from lightning strikes
C) To regulate voltage
D) To convert AC to DC
Answer: B) To protect equipment from lightning strikes

1383. Which type of transformer is used to step down the voltage in the substation?
A) Step-up Transformer
B) Step-down Transformer
C) Isolation Transformer
D) Auto Transformer
Answer: B) Step-down Transformer

1384. What is the recommended maintenance frequency for transformers in the substation?
A) Annually
B) Bi-annually
C) Every 5 years
D) As per manufacturer's guidelines
Answer: D) As per manufacturer's guidelines

1385. Which test is performed to check the insulation resistance of transformers?
A) Oil Testing
B) Megger Test
C) Load Test
D) Dielectric Test
Answer: B) Megger Test

1386. What is the purpose of earthing in the substation?
A) To prevent overloading
B) To ensure safety by providing a path for fault currents
C) To regulate voltage
D) To measure current
Answer: B) To ensure safety by providing a path for fault currents

1387. Which document provides detailed instructions for the operation and maintenance of substations?
A) Standard Operating Procedures (SOP)
B) Maintenance Manual
C) Electrical Safety Rules
D) All of the above
Answer: D) All of the above

1388. What is the purpose of a battery charger in the substation?
A) To store electrical energy
B) To provide backup power for control circuits
C) To regulate voltage
D) To convert AC to DC
Answer: B) To provide backup power for control circuits

1389. Which safety device is used to protect personnel from electrical shock?
A) Fuse
B) Circuit Breaker
C) Residual Current Device (RCD)
D) Lightning Arrester
Answer: C) Residual Current Device (RCD)

1390. What is the function of a busbar in the substation?
A) To step up voltage
B) To distribute electrical power to various circuits
C) To convert AC to DC
D) To measure current
Answer: B) To distribute electrical power to various circuits

1391. Which equipment is used to measure the current in the substation?
A) Voltmeter
B) Ammeter
C) Wattmeter
D) Frequency Meter
Answer: B) Ammeter

1392. What is the purpose of a control panel in the substation?
A) To monitor and control electrical parameters
B) To store electrical energy

C) To convert AC to DC
D) To regulate voltage
Answer: A) To monitor and control electrical parameters

1393. Which device is used to protect the transformer from overcurrent?
A) Fuse
B) Circuit Breaker
C) Relay
D) All of the above
Answer: D) All of the above

II. GENERAL KNOWLEDGE

1394. In which year did the first train steam off in India?
a.1848
b. **1853**
c**.** 1875
d. 1880

1395. Where are the headquarters of the East Coast Railways located?
a. Visakhapatnam
b. Kolkata
c. Hyderabad
d. Bhubaneswar

1396. Which train of the Indian Railways has the longest route length?
a. Howrah to Jammu Tawi Himgiri Express
b. KanyaKumari - Jammu Tawi Himsagar Express
c. Kanya Kumari - Dibrugarh Vivek Express
d. Guwahati - Thiruvananthapuram Express

1397. In which city is the Railway Staff College of Indian Railways located?
a. Pune
b. Delhi
c. Vadodara
d. Allahabad

1398. On which of the following is the longest railway bridge of Indian Railways located?
a. River Ganges
b. Vembanad lake
c. River Brahmaputra
d. Chilka lake

1399. In which city are 3 zonal headquarters of Indian Railways located?
a. Guwahati
b. Mumbai
c. New Delhi
d. Kolkata

1400. Who of the following is known for having designed the first railway time-tables?
a. George Bradman
b. George Bernard Shaw
c. George Bradshaw
d. George Brummel

1401. Which of the following is the largest railway junction of the Indian Railways?
a. Delhi
b. Bhatinda
c. Mathura
d. Prayagraj

1402. Which of the following is the easternmost division of the Indian Railways?
a. Tinsukia
b. Lumding
c. Rangiya
d. Katihar

1403. Over which of the following rivers has the world's highest railway bridge been constructed?
a. Chenab
b. Jhelum
c. Sutlej
d. Indus

1404. Which station of the Indian Railways has the longest railway platform in the world?
a. Gorakhpur
b. Pt. Deen Dayal Upadhyay Rly Stn

c. SSS Hubli Jn
d. Kharagpur

1405. Which of the following stations of Indian Railways has all the three gauges viz. broad, metre and narrow?
a. Lucknow
b. Chandigarh
c. Shimla
d. Siliguri

1406. What is the width of a broad gauge railway line in Indian Railways?
a. 5 feet 3 inches
b. 5 feet 6 inches
c. 4 feet 11 inches
d. 5 feet 4 inches

1407. Which Railway Minister presented the last Railway Budget before it was merged with the general budget?
a. Piyush Goyal
b. Sadananda Gowda
c. Suresh Prabhu
d. Ashwini Vaishnav

1408. Which of the following stations of Indian Railways was formerly known as Victoria Terminus?
a. Churchgate Railway Station
b. Mumbai Central
c. Lokmanya Tilak Terminus
d. Chhatrapati Shivaji Terminus

1409. Fairy Queen, the world's oldest steam locomotive in regular operation plies between New Delhi and
a. Shimla
b. Alwar
c. Kalka
d. Gwalior

1410. Who of the following was the first Railway Minister of independent India?
a. John Mathai
b. Lal Bahadur Shastri

c. Jawaharlal Nehru
d. Shanmugham Shetty

1411. To commemorate the 100th anniversary of which Indian personality, were the Shatabdi Express trains introduced in 1989?
a. Swami Vivekanand
b. Mahatma Gandhi
c. Jawaharlal Nehru
d. Rabindranath Tagore

1412. Who was the Governor General of India when railways were first introduced in India?
a. Lord Canning
b. Lord Dalhousie
c. Lord William Bentick
d. Lord Ripon

1413. In which city is the Wheel and Axle Plant of the Indian Railways located?
a. Kapurthala
b. Varanasi
c. Bengaluru
d. Rae Barely

1414. What is the rank of India in the world in terms of length of railroad network?
a. Bombay Baroda Railway
b. The Scindia Railway
c. Central India Railway
d. Great Indian Peninsula Railway

1415. Which of the following ran the first train from Bori Bunder to Thane in 1853?
a. Bombay Baroda Railway
b. The Scindia Railway
c. Central India Railway
d. Great Indian Peninsula Railway

1416. Which country does the Maitree Express connect India with?
a. Myanmar
b. Pakistan
c. Bangladesh

d. Nepal

1417. Which of the following zones of Indian Railways is the largest in terms of route kilometers?
a. Western Railways
b. Eastern Railways
c. Northern Railways
d. Southern Railways

1418. Which of the following is the largest marshalling yard in India (also the longest in Asia)? **a. Mughalsarai**
b. Mathura
c. Itarsi
d. Guntakal

1419. Through which of the following group of states does the Konkan Railways run?
a. Maharashtra-Karnataka-Telangana-Kerala
b. Maharashtra-Karnataka-Goa-Kerala
c. Maharashtra-Karnataka-Kerala-Tamil Nadu
d. Karnataka-Goa-Kerala-Tamil Nadu

1420. Which of the following zonal headquarters-city combinations is incorrect?
a. South East Central - Bilaspur
b. North Western - Jodhpur
c. East Central - Hajipur
d. West Central - Jabalpur

1421. Which of the following zones of Indian Railways administers the Matheran Hill Railway? a. Konkan Railways
b. Western Railways
c. Central Railways
d. Southern Railways

1422. In which city is the Indian Railway Institute of Financial Management (IRIFEM) located? **a. Secunderabad**
b. Lucknow
c. Rae Barely
d. Gurgaon

1423. Which of the following cities is the National Rail Museum located?

a. Mumbai

b. New Delhi

c. Hyderabad

d. Chennai

1424. The first railway line in India was opened by the British from -

a. Delhi to Bombay

b. Bombay to Thane

c. Calcutta to Allahabad

d. Bombay to Madras

1425. Into how many zones is the Indian Railways organised?

a. 18

b. 16

c. 14

d. 17

1426. Which state has the longest route kilometers of railway line in India?

a. Maharashtra

b. Andhra Pradesh

c. Rajasthan

d. Uttar Pradesh

1427. Headquarters of which one among the following railway zones of Indian Railways is situated at the highest elevation from the mean sea level?

a. East Central Railway

b. South Eastern Railway

c. South Western Railway

d. West Central Railway

1428. Which famous railway station has been renamed Pandit Deen Dayal Upadhyay Nagar railway station?

a. Mughalsarai

b. Hazrat Nizamuddin

c. Allahabad

d. Mathura

1429. Which of the following is the first railway station of the Indian Railways to run fully on solar power?
a. New Delhi
b. Guwahati
c. Nagpur
d. Bengaluru

1430. UTS (Unreserved Ticketing System) is a mobile app developed by -
a. C-DAC
b. IRCTC
c. CRIS
d. Infosys

1431. In which year was the building of Chhatrapati Shivaji Terminus (formerly Victoria Terminus) constructed?
a. 1918
b. 1908
c. 1898
d. 1888

1432. Who of the following was the architect of the famous Chhatrapati Shivaji Terminus (formerly Victoria Terminus)?
a. F.W. Stevens
b. George Wittet
c. Herbert Baker
d. Edward Lutyens

1433. At which place is the National Rail and Transportation University located?
a. Jabalpur
b. Guwahati
c. Vadodara
d. Mysuru

1434. On which route was the first Swarna Rajdhani Express run in November 2017 under Project Swarna with improved passenger amenities, aesthetics and hygiene standards?
a. New Delhi to Sealdah
b. New Delhi to Ahmedabad
c. New Delhi to Visakhapatnam
d. New Delhi to Goa

1435. Which of the following is a fully unreserved superfast train of the Indian Railways?
a. Antyodaya Express
b. Humsafar Express
c. Garib Rath Express
d. Suvidha Express

1436. In which year was the Pamban bridge connecting India's mainland to Rameswaram island commissioned?
a. 1898
b. 1907
c. 1912
d. 1914

1437. The inaugural run of Tejas Express in 2017 was between -
a. Mumbai and Surat
b. Delhi and Chandigarh
c. Mumbai and Goa
d. Delhi and Vadodara

1438. What is the purpose of using fish plates in railway tracks?
a. fix rails to the sleepers
b. fix sleepers to the ground
c. join two rails
d. join two coaches

1439. Deccan Queen is a popular train of Indian Railways which runs between which two stations?
a. Mumbai and Pune
b. Mumbai and Goa
c. Bengaluru and Mysore
d. Hyderabad and Bidar

1440. Which railway station of the Indian Railways is located at the highest altitude?
a. Ghum
b. Ooty
c. Shimla
d. Kalka

1441. Which zone of the Indian Railways operates the Darjeeling Himalayan Railway?
a. North Eastern Railway
b. Northeast Frontier Railway
c. East Central Railway
d. Eastern Railway

1442. On which route was India's first CNG powered train inaugurated in 2015?
a. Panipat to Ambala
b. Rewari to Rohtak
c. Ajmer to Jaipur
d. Vadodara to Anand

1443. How much time does the Gatimaan Express, India's fastest train, take to cover the distance between Delhi and Agra?
a. 60 minutes
b. 80 minutes
c. 100 minutes
d. 120 minutes

1444. In which year did Shri Suresh Prabhu present the last railway budget of India?
a. 2014
b. 2015
c. 2016
d. 2017

1445. Where are the headquarters of Konkan Railways located?
a. Mumbai
b. Mangalore
c. Goa
d. Kochi

1446. Where is the Indian Railway Institute of Mechanical and Electrical Engineering located? a. Lucknow
b. Jamalpur
c. Pune
d. Secunderabad

1447. India's longest railway tunnel is located between -
a. Jammu and Katra
b. Katra and Banihal
c. Banihal and Qazigund
d. Qazigund and Anantnag

1448. What is the assured sum given to the nominee of the confirmed/RAC railway passenger whose death occurs in a railway accident as per Optional Travel Insurance Scheme launched in 2016?
a. Rs. 1,00,000
b. Rs. 2,00,000
c. Rs. 5,00,000
d. Rs. 10,00,000

1449. How many stations have been identified for development under Adarsh Station Scheme?
a. 1253
b. 1352
c. 986
d. 765

1450. In which State have the highest number of stations been identified for development under Adarsh Station Scheme?
a. Uttar Pradesh
b. Tamil Nadu
c. West Bengal
d. Maharashtra

1451. In which year were the Rajdhani trains introduced by Indian Railways?
a. 1969
b. 1966
c. 1963
d. 1960

1452. On which route was the first Vande Bharat Express introduced in 2019?
a. Mumbai and Ahmedabad
b. New Delhi and Varanasi
c. New Delhi and Bhopal
d. Chennai and Bengaluru

1453. How many stations are to be initially redeveloped under the Amrit Bharat Scheme, the foundation stone of which was recently laid in August 2023?

a. 312
b. 424
c. 484
d. 508

1454. What does the letter N stand for in the abbreviation PNR Number which is allotted on reservations of tickets in Indian Railways?

a. Name
b. Numerical
c. Nominal
d. Notional

1455. If a passenger is allotted a waiting list which say RLWL/32, the R in RLWL stands for -

a. Remote
b. Railways
c. Reasonable
d. Reservation

1456. Some trains called EMUs are run by Indian Railways. What does M stand for in EMU?

a. Mechanical
b. Metro
c. Mainline
d. Multiple

1457. On which of the following voltages does the system of train lighting (bulbs and fans in compartments) work?

a. 230 V AC
b. 220 V DC
c. 110 V DC
d. 24 V DC

1458. What is the voltage used for electric traction in Indian Railways (i.e. voltage available on overhead lines)?

a. 25 kV AC
b. 11 kV AC
c. 2.5 kV DC

d. 11 kV DC

1459. Under whose tenure as Railway Minister, were the Garib Rath trains introduced by Indian Railways?
a. Mamta Banerjee
b. Lalu Prasad Yadav
c. Nitish Kumar
d. Ram Vilas Paswan

1460. How many stars does the official logo of Indian Railways have?
a. 15
b. 16
c. 17d. 18

1461. What is the name of the mascot of the Indian Railways?
a. Bholu
b. Appu
c. Kaka
d. Gopu

1462. What is the station which has three routes passing through it known as?
a. Central
b. Terminal
c. Junction
d. Cantt.

1463. Which station of the Indian Railways has the most number of platforms?
a. New Delhi
b. Howrah
c. Mumbai CST
d. Chennai Central

1464. What is the duplex process used for?
a) Manufacturing of steel for rails
b) Manufacturing of bolts
c) Coning of wheels
d) Transportation of wheels

1465. What is done to distinguish the rails?
a) They are colour coded
b) They have numbers
c) They are manufactured by different processes

d) They cannot be distinguished

1466. What is the value of Tolerance for Horizontal straightness of Class A rails?

a) 3mm
b) 1mm
c) 0.5mm
d) 0.8mm

1467. What is the Tup test also known as?

a) Hammer blow test
b) Falling weight test
c) Deviation test
d) Compressibility test

1468. What is the height from which the weight is dropped in the falling weight test?

a) 10m
b) 7.2m
c) 9.8m
d) 6m

1469. The tensile strength of the rail should not be less than _____

a) 100kg/mm
b) 85kg/m2
c) 72kg/mm2
d) 98kg/m2

1470. Where are third quality rails used?

a) Industrial sidings
b) Steep gradients
c) Hilly regions
d) They cannot be used

1471. Third quality rails are painted by which colour on the end face?

a) Black
b) White
c) Yellow
d) Red

1472. 90 UTS rails are more resistant against wear and tear as compared to Manganese rails with 72UTS

a) True

b) False

1473. What is the advantage of End hardened rails?

a) Easy to manufacture

b) Less End batter

c) Maximum end batter

d) Less cost

III. SIMPLE ARITHMETIC

1474. In decreasing the price of a motor bike by 10% the number of bikes sold is increased by 10%. What is the change in overall sales?

(a) Increases

(b) decreases

(c) remains same

(d) may increase or may decrease

1475. The radius of circle is increased by 20% its area is increased by:

(a) 44%

(b) 40%

(c) 20%

(d) no change

1476. A 30-ounce solution is 25% alcohol. If 60-ounces of water are added to it what percent of the new solution is alcohol?

(a) 8%

(b) 8.33%

(c) 8.35%

(d) 8.50%

1477. 80% of the workers working in a company wear jeans. Of these 20% wear jeans that are black what percent of the workers wear jeans that are not black?

(a) 30%

(b) 60.00%

(c) 60.55%
(d) 64%

1478. Two trains travel in the same direction at 50 and 32 km/h. A man in slower train observes that the faster train passes him in 15 seconds. The length of faster train is:
(a) 75m
(b) 100m
(c) 150m
(d) 341.66m

1479. A train 110 meters long passes a telegraph pole in 3 seconds. How long will it take to cross www.pakmcqs.com.pk www.pakmcqs.com.pkwww.worldixam.com a platform 165 meters long?
(a) 4 seconds
(b) 4.5 seconds
(c) 7 seconds
(d) 10 seconds

1480. Two trains for Lahore leave Rawalpindi at 8:30 AM and 9:00 AM and travel at 60 km/h and 70 km/h. How many kilometers from Rawalpindi will the two trains be together:
(a) 100
(b) 190
(c) 210
(d) 150

1481. A train traveling at 36 km/h took 10 seconds to pass a stationary man. What was the length of the train?
(a) 45m
(b) 80m
(c) 100m
(d) 110m

1482. A train 100 meters long traveling at 48 km/h completely crosses a bridge in 30 seconds. How long is the bridge:
(a) 100m
(b) 150m
(c) 200m
(d) 300m

1483. If part of tank filled in one hour = 1/10 then time required to fill the tank.

(a) 8

(b) 12

(c) 10

(d) 15

1484. An inlet pipe can fill a tank in 10 hrs and an outlet pipe empties the same full tank in 20 hrs. The time required to fill the tank when both pipes are opened.

(a) 10

(b) 20

(c) 30

(d) 25

1485. The price of a book increases by 10% in June but in July it decreases by 10%. What is its price at the end of July if its original price was 200?

(a) 198

(b) 200

(c) 190

(d) 210

1486. The price of a cap is increases by 25%. By how much percent should its price be decreased now to get the original price?

(a) 25%

(b) 22%

(c) 20%

(d) 18%

1487. Saima gets 50% that of her brother. Her brother gets what percent of Saima?

(a) 100%

(b) 150%

(c) 50%

(d) 200%

1488. The population of a town increases at a rate of 15% per year. At present population is 4000. What will it be after 2 years?

(a) 5290

(b) 5200

(c) 5431

(d) 500

1489. A lady spends 10% of her budget on utility bills and 75% of remaining on food provisions. If she is left with 558 what is her total budger?

(a) 2480

(b) 1650

(c) 5500

(d) 1650

1490. The population of a state annually increases at the rate of 15%. If its present population is 79350 what was its population two years ago?

(a) 50000

(b) 55000

(c) 58000

(d) 60000

1491. Imran got 20% increase in his salary at the end of 1st year. At the end of 2nd year he got an increase of 10%. If his present income is 19800 what was his income two years ago?

(a) 16000

(b) 17000

(c) 15000

(d) 18000

1492. A train 100 meters long completely crosses a bridge 300 meters long in 45 seconds. What is the speed of the train:

(a) 32 km/h

(b) 36 km/h

(c) 40 km/h

(d) 48 km/h

1493. A train 100 meters long completely passes a man walking in the same direction at 6 km/h in 5 seconds and a car in the same direction in 6 seconds. The speed of car is:

(a) 18 km/h

(b) 20 km/h

(c) 24 km/h

(d) 1/9 km/h

1494. If As 1 days work = 1/20 then time required to finish the job (in days)

(a) 20

(b) 10

(c) 25

(d) 30

1495. Alia can complete an assignment in 5 days and Babar can complete the same assignment is 20 days. The time taken by both Alia and Babar to complete the assignment working together is
(a) 3 days
(b) 5 days
(c) 4 days
(d) 2 days

1496. Asghar can do a job in 60 days. And both Asghar and Babar can do the same job in 20 days working together. Babar alone can do the same job in
(a) 30 days
(b) 60 days
(c) 28 days
(d) 45 days

1497. X can do a job in 16 days Y can do the same job in 20 days X Y and Z can do the job in 7.5 days. Alone Z can do the same job in
(a) 100 days
(b) 120 days
(c) 80 days
(d) 48 days

1498. Stations P and Q are situated 200 km apart. Two trains start from stations P and Q simultaneously. The train starting from station P goes towards station Q at 100 km per hour. The train starting from station Q goes towards station P at 150 km per hour. At what distance from station P will the two trains cross each other?
(a) 20 km
(b) 40 km
(c) 30 km
(d) 80 km

1499. The sum of two numbers is 40 and their difference is 4.The ratio of the numbers is
(a) 21:19
(b) 22:9
(c) 11:9
(d) 11:18

1500. A businessman allows a discount of 5% for cash payment. How much percent above the cost price should be marked to make a gain of 14%?

(a) 20%

(b) 15%

(c) 18%

(d) 25%

1501. A sum of money at simple interest doubles in 10 years. In how many years will it amount to 4 times itself?

(a) 25 years

(b) 35 years

(c) 30 years

(d) 75 years

1502. A military camp has provision for 50 days. If after 10 days 500 more soldiers joined the camp and the provisions lasted for 35 days only. How many men were there in the camp?

(a) 1700

(b) 3600

(c) 4000

(d) 3500

1503. If 9 men or 15 women can do a piece of work in 25 days, then 39 men and 10 women will complete the same work in?

(a) 4 days

(b) 6 days

(c) 5 days

(d) 7 days

1504. A reduction of 20% in the price of rice enables a person to buy 3.5 kg more rice for Rs.385.The original price of rice per kg is?

(a) Rs.25

(b) Rs.22.5

(c) Rs.27.5

(d) Rs.20

1505. As ‘Wheel’ is related to ‘Vehicle’ similarly ‘Clock’ is related to what?

(a) Needle

(b) Nail

(c) Stick

(d) Pin

1506. As 'Plateau' is related a 'Mountain', similarly 'Bush' is related to what?
(a) Plants
(b) Field
(c) Forest
(d) Trees

1507. If the position of Shaher Yar Akbar is 15th from one end and 13th from the other end in his class, what is the total number of students in his class?
(a) 28
(b) 24
(c) 27
(d) 29

1508. Aslam Khan starting from a fixed point goes 15 km towards North and then after turning to his right he goes 15 km. Then he goes 10, 15 and 15 metres after turning to his left each time. How far is he from his starting point?
(a) 5 metres
(b) 10 metres
(c) 20 metres
(d) 15 metres

1509. Effat goes 12 km towards North from a fixed point and then she goes 8 km towards South from there. In the end she goes 3 km towards east. How far and in what direction is she from her starting point?
(a) 7 km East
(b) 5 km West
(c) 7 km West
(d) 5 km North-East

1510. A certain distance is covered at a certain speed. If half of this distance is covered in double the time, the ratio of the two speed is
(a) 4:1
(b) 1:4
(c) 2:1
(d) 1:2

1511. Sum of the ages of A and B at present is 7 times the difference in their age. After five years, the sum of their ages will be 9 times the difference in their ages. The present age of the elder of the two is therefore ……

(a) 10 years

(b) 20 years

(c) 35 years

(d) none of these

1512. At present, father's age is 4 times his son's age. If 5 years back, father's age was 35 years, what is son's present age, in years?

(a) 10

(b) 12

(c) 15

(d) 20

1513. Thirty men take 20 days to complete a job working 9 hours a day. How many hour a day should 40 men work to complete the job?

(a) 8 hrs **(b) 71/2 hrs** (c) 3. 7 hrs (d) 9 hrs

1514. A and B can do a piece of work in 45 days and 40 days respectively. They began to do the work together but A leaves after some days and then B completed the remaining work in 23 days. The number of days after which A left the work was

(a) 9

(b) 11

(c) 12

(d) 15

1515. On sports day, if 30 children were made to stand in a column, 16 columns could be formed. If 24 children were made to stand in a column, how many columns could be formed?

(a) 20

(b) 30

(c) 40

(d) 50

1516. The probability that a man will be alive for 25 years is 3/5 and the probability that his wife will be alive for 25 years is 2/3. Find the probability that only the man will be alive for 25 years.

(a) 2/5

(b) 1/5

(c) 3/5
(d) 4/5

1517. Some green are blue. No blue are white.
(a) Some green are white
(b) No white are green
(c) No green are white
(d) None of the above

1518. Average age of students of an adult school is 40 years. 120 new students whose average age is 32 years joined the school. As a result the average age is decreased by 4 years. Find the number of students of the school after joining of the new students:
(a) 1200
(b) 120
(c) 360
(d) 240

1519. The cost of 16 packets of salt, each weighing 900 grams is Rs.28.What will be the cost of 27 packets, if each packet weighs 1Kg?
(a) Rs.52.50
(b) Rs.56
(c) Rs.58.50
(d) Rs.64.75

1520. A piece of cloth cost Rs 35. If the length of the piece would have been 4m longer and each meter cost Rs. 1 less , the cost would have remained unchanged. How long is the piece?
(a) 10
(b) 11
(c) 12
(d) 13

1521. In a journey of 15 miles two third distance was travelled with 40 mph and remaining with 60 mph. How much time the journey takes
(a) 40 min
(b) 30 min
(c) 120 min
(d) 20 min

1522. Find the average of first 40 natural numbers.

(a) 40

(b) 35

(c) 30.6

(d) 20.5

1523. A person who suffers from Claustrophobia has fear of what?

(a) Confined places

(b) Lightning

(c) Heights

(d) None of these

1524. Two taps A and B can fill a tank in 12 minutes and 15 minutes respectively. If both the taps are opened simultaneously and the tap A is closed after 3 minutes, then how much more time will it take to fill the tank by tap B?

(a) 7 min & 15 sec

(b) 7 min & 45 sec

(c) 8 min & 5 sec

(d) 8 min & 15 sec

1525. The milk and water in two vessels A and B are in the ratio 4:3 and 2:3 respectively. In what ratio, the liquids be mixed in both the vessels so that the new liquid contains half milk and half water?

(a) 7:5

(b) 1:2

(c) 2:1

(d) 6:5

1526. A car covers a distance of 715 km at a constant speed. If the speed of the car would have been 10 km/hr more, then it would have taken 2 hours less to cover the same distance. What is the original speed of the car?

(a) 45 km/hr

(b) 50 km/hr

(c) 55 km/hr

(d) 65 km/hr

1527. A sum of Rs. 427 is to be divided among A, B and C in such a way that 3 times A's share, 4 times B's share and 7 times C's share are all equal. The share of C is

(a) Rs. 84

(b) Rs. 147

(c) Rs. 196
(d) Rs. 240

1528. A house wife saved Rs. 2.50 in buying an item on sale. If she spent Rs.25 for the item, approximately how much percent she saved in the transaction?
(a) 8%
(b) 9%
(c) 10%
(d) 11%

1529. A man can row upstream at 8 kmph and downstream at 13 kmph. The speed of the stream is?
(a) 2.5 kmph
(b) 4.2 kmph
(c) 5 kmph
(d) 10.5 kmph

1530. A papaya tree was planted 2 years ago. It increases at the rate of 20% every year. If at present, the height of the tree is 540 cm, what was it when the tree was planted?
(a) 432 cm
(b) 324 cm
(c) 375 cm
(d) 400 cm

1531. A boy has Rs 2. He wins or loses Rs. 1 at a time If he wins he gets Rs. 1 and if he loses the game he loses Rs. 1. He can loose only 5 times. He is out of the game if he earns Rs 5. Find the number of ways in which this is possible?
(a) 14
(b) 23
(c) 16
(d) 12

1532. A is twice as good a workman as B and together they finish a piece of work in 18 days. In how many days will A alone finish the work?
(a) 27
(b) 26
(c) 25
(d) 24

1533. The speed of a car is 75 m/sec. What is the speed of car in km/hr?

(a) 135 km/hr

(b) 270 km/hr

(c) 200 km/hr

(d) 250 km/hr

1534. The least number exactly divisible by 12,15,20,54 is

(a) 532

(b) 220

(c) 540

(d) 500

1535. If the cost price of 10 chairs be equal to selling price of 16 chairs, then the loss percentage will be

(a) 9.6

(b) 17.5

(c) 20

(d) 37.5

1536. The diagonals of a rhombus are 15cm and 20cm.Find its area?

(a) 120sqcm

(b) 300sqcm

(c) 150sqcm

(d) 480sqcm

1537. P and Q started business with Rs.15000 and Rs.10000 respectively. Find the share of P in an annual profit of Rs. 25000.

(a) Rs.8000

(b) Rs.6000

(c) Rs.10000

(d) Rs.15000

1538. An amount doubles itself in 5 years with simple interest. What is the rate of interest?

(a) 20

(b) 25

(c) 33

(d) 35

1539. In a cricket match five batsmen A, B, C, D and E scored an average of 36 runs. D scored 5 more than E; E scored 8 fewer than A; B scored as many as D and E combined; and B and C scored 107 between them. How many runs did E score?
(a) 62
(b) 45
(c) 28
(d) 20

1540. If STRAY is coded as TUSBZ then how will MOURN be coded?
(a) LPVSO
(b) NPVSO
(c) NVPSO
(d) NPSVO

1541. A lady pointing to a man in a photograph says, "The sister of the son of this man is my mother-in-law." How is the husband of the lady related to the man in the photograph?
(a) Maternal grandson
(b) Nephew
(c) Son
(d) Maternal grandfather

1542. In a group of 15 people, 7 read French, 8 read English while 3 of them read none of these two. How many of them read French and English both?
(a) 0
(b) 3
(c) 4
(d) 5

1543. Arshad's monthly expenditures are 7500. How much he spends in 8 months?
(a) Rs.60000
(b) Rs.70000
(c) Rs.80000
(d) Rs.90000

1544. A car covers 20.525 km distance in one litre petrol. How much distance this car will cover in 15 litres petrol?
(a) 307.875
(b) 407.875
(c) 507.875
(d) 607.875

1545. A train covers 45½ km distance in one hour. How much distance train will cover in 25 hours?
(a) 1437.5 km
(b) 1537.5 km
(c) 1637.5 km
(d) 1137.5 km

1546. A seller loses 13% by selling a book at a certain price. Had he sold it for R.s 9.75 more, He would have gained 26%. C.P to him was:
(a) 25
(b) 30
(c) 39
(d) 42

1547. A shopkeeper bought bicycle for R.s 600 and sold it for R.s 720.find the gain percent.
(a) 15%
(b) 18%
(c) 20%
(d) 25

1548. Akbar sold his old gun for Rs.900, which he bought for Rs.2500. His loss is?
(a) 64%
(b) 82%
(c) 94%
(d) 15%

1549. The written price of a coat is Rs.275 If 15% rebate is given on the written price, what will a customer pay?
(a) Rs. 223.75
(b) Rs. 231.75
(c) Rs. 243.75
(d) Rs. 233.75

1550. . Cost of 6 handkerchiefs is Rs.90. Find the cost of 2 dozen handkerchiefs.
(a) Rs. 360
(b) Rs. 330
(c) Rs. 340
(d) Rs. 350

1551. The sum of the two digits of a two digit number is 14. The difference between the first digit and the second digit of the two digit number is 2. What is the product of the two digits of the two digit number?
(a) 56
(b) 48
(c) 45
(d) 65

1552. If the following words are arranged according to the dictionary order then which will be the second word in that order?
(a) Expound
(b) Exposure
(c) Expulsion
(d) Expose

1553. There are 16 teams in a soccer tournament. If everyone plays against everyone exactly once, how many games are there going to be?
(a) 119
(b) 120
(c) 1278
(d) 135

1554. Ayesha says, "Nasir's grandfather is the only son of my father." How is Ayesha related to Nasir?
(a) Daughter
(b) Sister
(c) Niece
(d) Grandmother

1555. A clock is so placed that at 12 noon, its minute hand points towards North-East. In which direction does its hour hand point at 1 :30 PM?
(a) North
(b) South
(c) East
(d) West

1556. Introducing a man, a woman says, "He is the only son of my mother's mother." How is the man related to the woman?
(a) Uncle
(b) Father

(c) Maternal uncle
(d) Uncle

1557. A train crosses a pole in 15 seconds, while it crosses 100 meter long platform in 25 seconds. The length of the train is
(a) 125m
(b) 135 m
(c) 159 m
(d) 175 m

1558. A house owner wants to get his house painted. He is told that this would require 25 kg of paint. Allowing for 15% wastage and assuming that the paint is available in 2kg tins, the number of tins required for painting the house is
(a) 15
(b) 12
(c) 10
(d) 20

1559. The difference in selling prices of a heater at gains of 5% and 7.5% is rupees 1.25.then the cost prize of heater is:
(a) 45
(b) 50
(c) 52.50
(d) 53.75

1560. The town 'C' is there in between 'A' and 'B'. If Nasir travels from A to C with a speed of 4 km/hr and C to B with 6 km/hr, what is the average speed of Nasir from A to B?
(a) 4.8 km
(b) 4.6 km
(c) 5 km
(d) 5.2 km

1561. A man starting at a point walks 1 km east, then 2 km north, then 1 km east, then 1 km north, then 1 km east and then 1 km north to arrive at his destination. What is the shortest distance between the starting point and his destination?
(a) 8 KM
(b) 7 KM
(c) 6 KM
(d) 5 KM

1562. What is the smallest number, which when divided by 3, 8 and 15 leaves the remainder 1, 6 and 13 respectively?
(a) 121
(b) 242
(c) 118
(d) 239

1563. A perfect number is defined as a number the sum of whose divisors (excluding the number itself, but including 1) is equal to the number itself. 6 is the lowest perfect number.Find the second lowest number.
(a) 12
(b) 14
(c) 28
(d) 496

1564. A shopkeeper sells 18 mangoes for the purchase price of 20 mangoes. The percent profit made by the shopkeeper is.
(a) 10%
(b) 11.11%
(c) 9.09%
(d) 12%

1565. A pineapple costs Rs. 7 each a watermelon costs Rs. 5 each Z spends Rs. 38 on these fruits. The number of pineapples purchased is:
(a) 2
(b) 4
(c) 3
(d) 5

1566. In a certain series, each number except the first and second is obtained by adding the previous two numbers. If the first number is 2 and sixth 26, what is the second number?
(a) 4
(b) 3
(c) 8
(d) 6

1567. The average of 13 results is 68. The average of first seven is 63 and that of the last seven is 70; the seventh result is:

(a) 73.5

(b) 94

(c) 47

(d) 69

1568. A ship sails out to a mark at the rate of 10 km per hour and sails back at the rate of 15 km per hour. The average rate of sailing is …….

(a) 12.5 km.hr

(b) 12 km/hr

(c) 7.5 km/hr

(d) 13 km/hr

1569. $0.003 \times 0.02 = ?$

(a) 0.06

(b) 0.006

(c) 0.0006

(d) 0.00006

Ans: (d)

1570. What is the average of the numbers: 0, 0, 4, 10, 5, and 5 ?

(a) 2

(b) 3

(c) 4

(d) 5

Ans: (c)

1571. What is the rate of discount if a car which price was $4,000 was sold for $3,200 ?

(a) 14%

(b) 16%

(c) 18%

(d) 20%

Ans: (d)

1572. $|-4| + |4| - 4 + 4 = ?$

(a) 0

(b) 2

(c) 4

(d) 8

Ans:

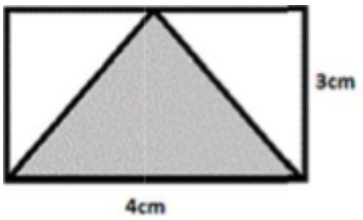
(d)

1573. What is the value of x in the equation $3x - 15 - 6 = 0$?

(a) 7
(b) 8
(c) 9
(d) 9

Ans: (a)

1574. What is the area in cm^2 of the shaded region in the diagram below?



(a) 6
(b) 7
(c) 8
(d) 9

Ans: (a)

1575. If A completes a particular work in 8 days and B completes the same work in 24 days. How many days will it take if they work together?

(a) 4
(b) 5
(c) 6
(d) 7

Ans: (c)

1576. What comes next in the sequence: 1, 3, 11, 43, _ ?

(a) 16 1
(b) 17 1
(c) 18 1
(d) 19 1

Ans:
(b)

1577. What is the distance travelled by a car which travelled at a speed of 80 km/hr for 3 hours and 30 minutes?

(a) 275 km
(b) 280 km
(c) 285 km
(d) 290 km

Ans: (b)

1578. In a class of 40 students 20% are girls. How many boys are there in the class?

(a) 26
(b) 28
(c) 30
(d) 32

Ans: (d)

1579. $2 + 2 - 2 \times 2 \div 2 = ?$

(a) 0
(b) 1
(c) 2
(d) 4

Ans: (c)

1580. $|2| + |-2| + (2)^2 + (-2)^2 = ?$

(a) 6
(b) 8
(c) 10
(d) 12

Ans: (d)

1581. If x = –1, then what is the value of the function

$f(x) = x^3 + 4x + 12$

(a) 7
(b) 9
(c) 11
(d) 13

Ans: (a)

1582. What comes next in the sequence: 2, 4, 10, 28, _ ?

(a) 64
(b) 70
(c) 76
(d) 82

Ans: (d)

1583. What is the average of first 150 natural numbers?

(a) 70
(b) 70.5
(c) 75
(d) 75.5

Ans: (d)

1584. How many feet there are in 5 meters? If 1 meter = 3.281 feet.

(a) 15.505
(b) 15.905
(c) 16.405
(d) 16.805

Ans:
(c)

1585. $0.003 \times 0.0004 = ?$

(a) 0.0012
(b) 0.00012
(c) 0.000012
(d) 0.000001
2

Ans:
(d)

1586. What is average (Arithmetic Mean) of the numbers: 2, 4, 5, 0, 9, 10, and 12?

(a) 5
(b) 6
(c) 7
(d) 8

Ans: (b)

1587. $(2^2)^3 \times (2^3)^2$

(a) 4096
(b) 4046
(c) 3096
(d) 3046

Ans:
(a)

1588. A completes a particular work in 4 days and B completes the same work in 12 days. How many days will it take if they work together?

(a) 1
(b) 2
(c) 3

(d) 4

Ans: (c)

1589. In the total investment of Rs. 5,00,000, B's share is 20%. While A's share is 40% of the B's. What is the share of A?

(a) Rs. 24,000
(b) Rs. 30,000
(c) Rs. 36,000
(d) Rs. 40,000

Ans: (d)

1590. If the sum of two numbers is 16, and their product is 63. Then the larger number is

(a) 9
(b) 10
(c) 11
(d) 12

Ans: (a)

1591. The sum of three consecutive even numbers is 78. What is the largest number?

(a) 22
(b) 24
(c) 26
(d) 28

Ans: (d)

1592. What is the number, if 40% of the number is 380?

(a) 920
(b) 930
(c) 940
(d) 950

Ans: (d)

1593. A boy sold his bicycle for $2400 and earned 20% profit. What was the original price (the price without the profit) of the bicycle?

(a) $1940
(b) $1960
(c) $2000
(d) $2200

Ans:
(c)

1594. Suppose Rs.1,000 is deposited into a savings account that earns Compounded interest at an a rate of 5%. How much will be in the account after 2 years if the interest is compounded annually?

(a) Rs.1102.5

(b) Rs.1110.5
(c) Rs.1112.5
(d) Rs.1120.5
Ans: (a)

1595. 1, 2, 5, 14, _____?
(a) 38
(b) 39
(c) 40
(d) 41
Ans: (d)

1596. What is the sum of the first 12 numbers of the series: 2, 6, 10, 14, …. ?
(a) 260
(b) 268
(c) 280
(d) 288
Ans: (d)

1597. $|2|-|-2|-2^2-(-2)^2=?$
(a) –8
(b) –6
(c) –4
(d) –2
Ans:
(a)

1598. What is the sum of the sequence: 2+4+6+ +98+100 = ?
(a) 2450
(b) 2500
(c) 2550
(d) 2600
Ans: (c)

1599. What is the sum of the numbers: 1, 2, 3, 4, 99, 100 ?
(a) 5000
(b) 5050
(c) 5100
(d) 5150
Ans: (b)

1600. In a class of 60 students the ratio of boys to girls is 3:2. How many girls are there in the class?
(a) 21

(b) 22
(c) 23
(d) 24
Ans: (d)

1601. What is the volume of a right-circular cylinder having radius 2cm and height 7cm?
(a) 86 cm^2
(b) 88 cm^2
(c) 90 cm^2
(d) 92 cm^2
Ans: (b)

1602. What is the average of the numbers: 2, 5, 0, 10, 10, 12, 8 and 9?
(a) 6
(b) 7
(c) 8
(d) 9
Ans: (b)

1603. If 75 percent of a number is y. And, 80 percent of y is 60, then what is the number?
(a) 100
(b) 110
(c) 120
(d) 130
Ans:
(a)

1604. The cost of an article is Rs.160. What should be the selling price in rupees to obtain a profit of 15 percent?
(a) 180
(b) 182
(c) 184
(d) 186
Ans:
(c)

1605. A person preparing for Olympics Games ran 9 km in 1 hour and 20 minutes, and then 12 km in 1 hour and 40 minutes. What is the average speed in km/hr?
(a) 4 km/hr
(b) 5 km/hr
(c) 6 km/hr
(d) 7 km/hr
Ans: (d)

1606. In a town of population 100,000, 20% have internet connection. And those who have

internet connection, 15% use PTCL internet service. How many people have internet service other than PTCL?

(a) 3,000
(b) 7,000
(c) 12,000
(d) 17,000

Ans: (d)

1607. A car parking charges n dollars for the first hour, and m pence for every additional hour. What amount it will charge if a car stayed for 5 hours?

(a) n + 5m
(b) n + 4m
(c) m + 4n
(d) m + 5n

Ans: (b)

1608. Bilal's salary is 120% of Ahmed salary and Saba's salary is 60% of Ahmed's salary. The total of all three salaries is Rs.112,000. What is Saba's salary?

(a) Rs.24,000
(b) Rs.24,500
(c) Rs.25,000
(d) Rs.25,500

Ans: (a)

1609. Price of sugar is increased by 25%. The percentage of consumption to be decreased so that there would be no increase in the expenditure is

(a) 18%
(b) 20 %
(c) 22%
(d) 24%

Ans: (b)

1610. A carton contains 10 boxes, each box containing one dozen cubes. How many cartons are needed to fill 960 cubes?

(a) 7
(b) 8
(c) 9
(d) 12

Ans: (b)

1611. The difference between two positive numbers is 3 and the sum of their squares is 369. Then the sum of the numbers is

(a) 33
(b) 20
(c) 81
(d) 27
Ans: (d)

1612. A wheel rotates 15 times each minute. How many degrees will it rotate in 12 seconds of time?

(a) 360°
(b) 720°
(c) 1080°
(d) None of the above
Ans: (c)

1613. A goods train runs at the speed of 72 kmph and crosses a 250 m long platform in 26 seconds. What is the length of the goods train?

(a) 230 m
(b) 240 m
(c) 260 m
(d) 270 m
Ans: (d)

1614. The average of the first five multiples of 3 is

(a) 3
(b) 9
(c) 12
(d) 15
Ans: (b)

1615. In the below series, which number comes next? 1, 3, 7, 15, 31, 63, ------

(a) 120
(b) 126
(c) 127
(d) 94
Ans: (c)

1616. A reduction of 20% in the price of sugar enables a purchaser to obtain 3 kg more for Rs. 120.
The original price of sugar per kg is

(a) Rs. 15
(b) Rs. 12
(c) Rs. 8

(d) Rs. 10
Ans: (d)

IV. Official Language Policy and Rules

1617. What is the Official Language of the Union of India
A)Hindi in Devanagari Script
B) English Script
C)Bengali Script
D)Kashmir

1618. Which form of numerals are to be used for official purposes of the Union
A)Roman Numeral
B) International form of Indian numerals
C) Devanagari Numerals
D)Regional Numeral

1619. Which part of the Constitution contains provisions regarding Official Language?
a. Part XV
b. Part XVI
c. Part XVII
d. Part XVIII

1620. On which date Part XVII of the Constitution was passed in Parliament?
a. August 10, 1949
b. 14.09.1949
c. October 10, 1949
d. November 10, 1949

1621. How many chapters are there in Part XVII of the Constitution?
a. 4 Chapters
b. 3 Chapters
c. 2 Chapters
d. 8 Chapters

1622. How many articles are there in Part XVII of the Constitution?
a. 9 Articles
b. 2 Articles
c. 7 Articles

d. 1 Articles

1623. What are all the nine Articles covered under Part XVII of the Constitution?

a. Articles 340-348
b. Articles 343-351
c. Articles 345-353
d. Articles 350-358

1624. In which part and in which article of the constitution the provision regarding the language to be used for Transaction of business in Parliament exists?

a. Part V, Article 110
b. Part V, Article 115
c. Part V, Article 120
d. Part XVII, Article 348

1625. In which part and in which article of the constitution the provision regarding the language to be used for the transaction of business in State Legislatures exists?

a. Part V, Article 120
b. Part VI, Article 200
c. Part VI, Article 210
d. Part XVII, Article 348

1626. Which article of the constitution contains a provision regarding the language to be used in courts etc.?

a. Article 120
b. Article 210
c. Article 343
d. Article 348 & 349

1627. Which article of the constitution contains a provision regarding the official language of the Union of India?

a. Article 120
b. Article 210
c. Article 343 & 344
d. Article 348

1628. Which article of the constitution contains a provision regarding the official language of States?

a. Article 343
b. Article 345
c. Article 348

d. Article 350

1629. As per Article 343(1) of the constitution when Hindi became the official language of the Union of India?

a. January 26, 1950
b. January 26, 1965
c. August 15, 1947
d. January 1, 1970

1630. Name the articles of the constitution which in their provisions contain a reference to Eighth Schedule of the constitution?

a. Articles 120 and 210
b. Articles 343 and 348
c. Articles 344(1) and 351
d. Articles 345 and 350

1631. In which part of the constitution are the articles 343-351, that gives information about Official Language available?

a. Part V
b. Part VI
c. Part XI
d. Part XVII

1632. At present how many languages are enlisted in the Eighth Schedule of the Constitution?

a. 18
b. 20
c. 22
d. 25

1633. When the Constitution was adopted, how many languages were included in the Eighth Schedule initially?

a. Fourteen
b. Seventeen
c. Twelve
d. D) Sixteen

1634. In which year Maithili, Bodo, Dogri and Santhali were added to the Eighth Schedule later?

a. 2005

b. 2003
c. 2012
d. 2002

1635. In which year Sindhi was added to the Eighth Schedule?
a. 1956
b. 1965
c. 1967
d. 1981

1636. In which year Nepali, Konkani & Manipuri were added to the 8th Schedule?
a. 1995
b. 1989
c. 1988
d. 1992

1637. Which one is the foreign language included in the 8th Schedule?
a. Nepali
b. Bangladesh
c. Sri Lanka
d. Sindhi

1638. Which is the Official Language of Arunachal Pradesh?
a. Telugu
b. English
c. Marathi
d. Hindi

1639. When was the Official Language Act 1963 passed?
a. 10.05.1963
b. 09.3.1965
c. 02.08.1988
d. 11.11.1971

1640. When did section 3(3) of the Official Language Act take effect?
a. 24 March 1965
b. 22 September 1932
c. 26 January 1965
d. 25 May 1970

1641. When was the Official Language Act, 1963 was amended?

a. 1967
b. 1965
c. 1955
d. 1985

1642. How many sections are there in the Official Language Act 1963, as amended in the year 1967?

a. 10 Sections
b. 8 sections
c. 3 Sections
d. **9 Sections**

1643. With which section 7 of Official Language Act,1963 is concerned?

a. Powers of President
b. Continued use of English for certain purposes
c. Language for High Courts
d. Duties of Union Government

1644. Why was the Official Languages Act 1963 passed?

a. To make Hindi the sole official language
b. To provide for the continued use of English for official purposes
c. To promote regional languages
d. To abolish English language

1645. When was the Resolution on Official Language passed by Parliament?

a. January 18, 1965
b. January 18, 1968
c. January 26, 1950
d. August 15, 1947

1646. When were Official Languages Rules passed?

a. 1963
b. 1968
c. 1975
d. 1976

1647. What is the primary purpose of Discipline and Appeal Rules?

A) To punish employees
B) To maintain discipline and ensure accountability

C) To promote employees
D) To fix salary

1648. Which of the following is a type of misconduct?
A) Good performance
B) Unauthorized absence
C) Teamwork
D) Punctuality

1649. What is the purpose of an appeal under Discipline and Appeal Rules?

A) To punish employees
B) To provide a fair hearing and redress grievances
C) To promote employees
D) To fix salaries

1650. Who is authorized to impose penalties under Discipline and Appeal Rules?
A) Any employee
B) Disciplinary authority
C) Union representative
D) Customer

1651. What is the difference between a minor penalty and a major penalty?
A) Minor penalty is more severe
B) Minor penalty is less severe, while major penalty is more severe
C) Both are the same
D) None of the above

1652. Which of the following is a minor penalty?
A) Dismissal
B) Censure
C) Removal
D) Compulsory retirement

1653. What is the purpose of a show-cause notice?
A) To inform employees of promotions
B) To inform employees of alleged misconduct and seek explanation
C) To fix salaries
D) To provide training

1654. Who can file an appeal under Discipline and Appeal Rules?
A) Any employee

B) Aggrieved employee
C) Disciplinary authority
D) Union representative

1655. What is the time limit for filing an appeal under Discipline and Appeal Rules?
A) 30 days
B) As specified in the rules or regulations
C) 60 days
D) 90 days

1656. What is the role of the appellate authority?
A) To impose penalties
B) To review the decision of the disciplinary authority
C) To investigate misconduct
D) To provide training

1657. Which of the following is a type of disciplinary action?
A) Promotion
B) Suspension
C) Transfer
D) Training

1658. What is the purpose of a disciplinary inquiry?
A) To punish employees
B) To investigate alleged misconduct and determine guilt
C) To promote employees
D) To fix salaries

1659. Who can conduct a disciplinary inquiry?
A) Any employee
B) Inquiry officer or disciplinary authority
C) Union representative
D) Customer

1660. What is the purpose of a charge sheet?
A) To inform employees of promotions
B) To inform employees of alleged misconduct and seek explanation
C) To fix salaries
D) To provide training

1661. Which of the following is a major penalty?
A) Censure

B) Removal
C) Suspension
D) Warning

1662. What is the role of the disciplinary authority in disciplinary proceedings?
A) To investigate misconduct
B) To impose penalties and ensure accountability
C) To provide training
D) To promote employees

1663. Which of the following is a principle of disciplinary proceedings?
A) Bias
B) Fairness and impartiality
C) Punishment without reason
D) None of the above

1664. What is the purpose of an appeal hearing?
A) To punish employees
B) To provide a fair hearing and redress grievances
C) To promote employees
D) To fix salaries

1665. Who can represent an employee in a disciplinary inquiry?
A) Any employee
B) Defense representative or union representative
C) Disciplinary authority
D) Customer

1666. What is the significance of timelines in disciplinary proceedings?
A) To delay proceedings
B) To ensure timely resolution and fairness
C) To punish employees
D) To promote employees

1667. An appeal submitted after the due date may be:
a) Automatically rejected
b) Referred to court
c) Accepted with justification
d) Forwarded to Inquiry Officer

1668. During inquiry, a government servant is given:
a) No chance to defend

b) Only written representation
c) Opportunity to cross-examine witnesses
d) Retirement benefits

1669. The first stage advice of CVC is sought:
a) Before issue of charge sheet
b) After penalty
c) Before suspension
d) After appeal

1670. When can a major penalty be imposed without inquiry?
a) On minor misconduct
b) When employee admits guilt
c) Never
d) If department decides

1671. Inquiry officer must submit the report to:
a) Appellate authority
b) Presenting officer
c) Complainant
d) Disciplinary authority

1672. Can a government servant withdraw his appeal?
a) No
b) Yes, with approval
c) Yes, anytime
d) Only during inquiry

1673. Penalty must be imposed by:
a) Any officer
b) Vigilance
c) Disciplinary authority
d) Court

1674. Suspension can be extended:
a) Indefinitely
b) By court order
c) With review and reasons
d) On employee’s request

1675. When was Official Languages Rules amended?

a. 1965
b. 1987
c. 1970
d. 1975

1676. Into how many Regions Indian states have been classified, according to Official Languages Rules?

a. 1965
b. 1987
c. 1970
d. 1975

1677. What are all the 3 Regions as classified under Official Languages Rules?

a. 10 States, 2 Union Territory
b. 9 States, 3 Union Territories
c. 11 States, 1 Union Territory
d. 8 States, 4 Union Territories

1678. How many States and Union Territories are there in Region 'A'?

a. 8 States, 4 Union Territories
b. 11 States, 1 Union Territory
c. 9 States, 3 Union Territories
d. 10 States, 2 Union Territories

1679. When is "Hindi Day" celebrated every year?

a. 14th September
b. 15th October
c. 6th August
d. 17th June

1680. Which are the states that come under Region 'A'?

a. Assam, Bihar, Chhattisgarh, Jharkhand, Uttar Pradesh, Uttarakhand,
b. Haryana, Himachal Pradesh, Rajasthan, Madhya Pradesh
c. Gujarat, Maharashtra, Goa, Daman and Diu, Dadra and Nagar Haveli
d. Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand, Madhya Pradesh, Rajasthan, Uttar Pradesh, Uttarakhand

e. Kerala, Tamil Nadu, Karnataka, Andhra Pradesh

1681. 637. Which are the states that come under Region 'B'?

a. Assam, Meghalaya, Manipur, Mizoram, Nagaland,Arunachal Pradesh, Tripura

b. Gujarat, Maharashtra, Goa, Daman and Diu, Dadra and Nagar Haveli

c. Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand,

d. Madhya Pradesh, Rajasthan, Uttar Pradesh, Uttarakhand

e. Kerala, Tamil Nadu, Karnataka, Andhra Pradesh

1682. Which are the states that come under Region 'C'?

a. Assam, Meghalaya, Manipur, Mizoram, Nagaland, Arunachal Pradesh, Tripura

b. Gujarat, Maharashtra, Goa, Daman and Diu, Dadra and Nagar Haveli

c. Bihar, Chhattisgarh, Haryana, Himachal Pradesh, Jharkhand

d. Madhya Pradesh, Rajasthan, Uttar Pradesh, Uttarakhand

e. Kerala, Tamil Nadu, Karnataka, Andhra Pradesh, Telangana, Puducherry

1683. Who is responsible for the compliance of provisions of the Official Languages Act and rules?

a. Department of Official Language

b. Ministry of Home Affairs

c. Union Government, State Governments, and Union Territory Administrations

d. Parliament of India

1684. Which Ministry takes important decisions pertaining to Official Language?

a. Ministry of Education

b. Ministry of Culture

c. Ministry of Home Affairs

d. Ministry of Information and Broadcasting

1685. According to Official Languages Rules, Tamilnadu falls under which region?

a. Region A

b. Region B

c. Region C

d. Region D

1686. According to Official Languages Rules, Andaman & Nicobar Islands fall under which region?

a. Region A
b. Region B
c. Region C
d. Region D

1687. Which are the Union Territories classified under Region "B"?
a. Delhi, Chandigarh, Dadra and Nagar Haveli and Daman and Diu
b. Andaman and Nicobar Islands, Puducherry
c. Lakshadweep, Jammu and Kashmir, Ladakh
d. None of the above

1688. States in which Urdu has been declared as one of the Official Language?
a. Bihar, Jharkhand, and West Bengal
b. Andhra Pradesh, Telangana, and Uttar Pradesh
c. Andhra Pradesh, Telangana, Jharkhand, Bihar, and Uttar Pradesh
d. Gujarat, Maharashtra, and Karnataka

1689. Who was the Charmian of the First Official Language Commission?
a. Jawaharlal Nehru
b. B.G. Kher
c. Rajendra Prasad
d. Morarji Desai

1690. Who was the First Chairman of the Committee Which was formed on the recommendation of the Official Language Commission?
a. Jawaharlal Nehru
b. Morarji Desai
c. B.G. Kher
d. Rajendra Prasad

1691. Who was the First Chairman of the Parliamentary Committee on Official Language constituted in the year 1976?
a. Om Mehta
b. Morarji Desai
c. B.G. Kher
d. Rajendra Prasad

1692. Who chaired the First Railway Hindi Salahkar Samiti constituted in 1973?
a. Lalit Narayan Mishra
b. Morarji Desai

c. B.G. Kher
d. Jagjivan Ram

1693. As per the Constitution, who is translating the Statutory Rules, Regulations and Orders?

a. The President of India
b. The Union Government
c. The State Governments
d. The Supreme Court of India

1694. Which was the Main Language and Co-Official Language used for the Official Purpose of the Union of India up to 1965?

a. Hindi and English
b. Hindi (Main) and English (Co-Official)
c. English and Hindi
d. Sanskrit and English

1695. Which Committee of the Committee on Parliament on Official Language prepared the Draft?

a. First Committee
b. B) Second Committee
c. Third Committee (B.G. Kher Committee's recommendations led to formation of Committee under Morarji Desai)
d. Fourth Committee

1696. In which year the post of Hindi Assistant was created in Railway Board in compliance of President's order?

a. 1947
b. 1950
c. 1957
d. 1965

1697. In which year, Hindi (Parliament) Section was established in Railway Board?

a. 1960
b. 1955
c. 1957
d. 1965

1698. In which year, the Hindi Translation of Railway Budget was prepared and who was the Railway Minister?

a. 1955, Jawaharlal Nehru

b. 1956, Lal Bahadur Shastri
c. 1960, Morarji Desai
d. 1965, Indira Gandhi

1699. Angami is a language of Goa
a. Nagaland
b. Assam
c. Bihar
d. Manipur

1700. How many languages and dialects are spoken by people all over the world?
a. 9000
b. 6000
c. None
d. 4000

1701. Committee on Official Language shall consist _____members of the council of States
a. Thirty
b. Ten
c. Hundred
d. Twenty

1702. Which of the following are the languages of Pondicherry?
a. Tamil, Telugu, Malayalam
b. French, English
c. All of the above
d. None of the above

1703. Highest speaking language in India after Hindi is
a. Bengali
b. Telugu
c. Marathi
d. Tamil

1704. The provisions related to official language of India can be amended by
a. Simple Majority
b. Special Majority
c. Presidential Order
d. Constitutional Amendment

1705. Lepcha is a language of
a. Sikkim
b. Nagaland
c. Tripura

d. Andhra Pradesh

1706. Name the language that is widely spoken by the people residing in Assam
a. Gujarati
b. Punjabi
c. .English
d. Assamese

1707. Which one of the following languages is not spoken in Sikkim?
a. Bhutia
b. None of these
c. Lepcha
d. Punjabi

1708. Sherdukpen is a language of
a. Bihar
b. Haryana
c. Arunachal Pradesh
d. West Bengal

1709. What is the additional official language of Uttarakhand?
a. Garhwal
b. Sanskrit
c. Kumaoni
d. Hindi

1710. Approximately, how many people speak Chinese language?
a. 1 million
b. 1 billion
c. 1 thousand
d. 1 lakh

1711. LIPI/Script of Hindi Language is
a. Sanskrit
b. Devanagari
c. Urdu
d. Gurumukhi

1712. In which language vande matram was written?
a. Marathi
b. Bengali
c. Hindi
d. Sanskrit

1713. English is the official language of which one of the following Indian States ?
a. Assam

b. Tripura
c. Nagaland
d. Manipur

1714. Arrange languages in Ascending order of Highest Speaking Language:
a. Spanish, English, Russian, Chinese
b. Bengali, French, English, Chinese
c. Arabic, English, Spanish, Chines
d. Arabic, Spanish, English, Chinese

1715. When Haryana was formed in 1966, _____ was declared as the second official language of the State by Bansi Lal Govt
a. Punjabi
b. Telugu
c. Tamil
d. Hindi

1716. Which one of the following languages is not widely spoken in Tripura?
a. English
b. Bengali
c. Hindi
d. Tripuri

1717. Sanskrit is official language of the state
a. Madhya Pradesh
b. Uttarakhand
c. Himachal Pradesh
d. Karnataka

1718. Apotanji is a language of
a. Sikkim
b. West Bengal
c. Kerala
d. Arunachal Pradesh

1719. The language spoken in Lakshadweep islands is
a. Marathi
b. Tamil
c. Malayalam
d. Gujarati

1720. While Hindi is the official language, English has been permitted for official use
a. till 1995
b. till 2001
c. till 2010

d. Indefinitely

1721. Which of the following is the official language of Jammu and Kashmir?
a. Kannada, Malayalam and Telugu
b. Farsi, Urdu and Hindi
c. Urdu, Hindi and Kashmir
d. Bengali, Hindi and English

1722. The only religious book ever printed in a shorthand scripts is
a. Bible
b. Ramayan
c. Kuran
d. Geeta

1723. The oldest Indian language is
a. Tamil
b. Telugu
c. Punjabi
d. Hindi

1724. When was the first time 'World Hindi Day' is observed?
a. 1975
b. 2006
c. 2011
d. 2015

1725. According to Annual Programme, in which order Advertisement (Tender Notice etc.) of Central Offices are to be published in News Papers?
a. English, Hindi, Regional Language, Other Language
b. Hindi, English, Regional Language, Other Language
c. Regional Language, Hindi, English, Other Language
d. other Language, Regional Language, Hindi, English

1726. Konkani is the official language of _____.
a. Andhra Pradesh
b. Arunachal Pradesh
c. West Bengal
d. Goa…

1727. Which of these languages is generally not spoken in Southern part of India?
a. Telugu
b. Konkan…
c. Maithili

d. Malayalam...

1728. Urdu is the official language of .
a. Andhra Pradesh
b. Arunachal Pradesh
c. West Bengal
d. Jammu kashmir

1729. Malayalam is the official language of ……
a. Puducherry
b. Lakshadweep
c. Daman and Diu
d. Delhi

1730. Dzongkha is the official Language of …….. .
a. Indonesia
b. Cambodia
c. Bhutan
d. Myanmar.

1731. Telugu is the official language of _____.
a. Andhra Pradesh
b. Arunachal Pradesh
c. Assam
d. Bihar

1732. Ramcharitmanas is an epic poem written in which language?
a. Santali
b. Munda
c. Awadhi
d. Sanskrit

1733. How many languages are officially recognized in India?
a. 17
b. 19
c. 22
d. 10

1734. Who among the following was the first grammarian of the Sanskrit language?
a. Kalhana

b. Maitreyi
c. Kalidasa
d. Panini…

1735. Who will be the President of the Official Language Implementation Committee in the field offices? 'SELF LEARNING KIT' ON OFFICIAL LANGUAGE RULES & PROVISIONS

a. Head of the Department
b. Administrative Head of the Office
c. Any Group Officer
d. Any Branch Officer

1736. Who will be the Member-Secretary of the Official Language Implementation Committee in the field offices?

a. Head of the Department
b. Administrative Head of the Office
c. Any Group Officer
d. Hindi Officer

1737. Communications from a Central Government office to State or Union Territory in Region 'C' or to any office (not being a Central Government office) or person in such State shall be in

a. English
b. Hindi
c. Bilingual
d. the Language of State Concerned

1738. Communications from a Central Government office to a State in Region 'A' or to any office (not being a Central Government office) or person shall (save in exceptional cases) be in

a. English
b. Hindi
c. Bilingual
d. the Language of State Concerned

1739. Communications from a Central Government office to any person in a State or Union Territory of Region 'B' may be in .

a. English
b. Hindi
c. Either Hindi or English

d. the Language of State Concerned

1740. Communications from a Central Government office in Region 'C' to a State or Union Territory of Region 'A' or Region 'B' or to any office (not being a Central Government office) or person in such State may be in

a. English
b. Either in Hindi or English
c. Hindi
d. the Language of State Concerned

1741. Communications from a Central Government office in reply to communications in Hindi shall be in

a. English
b. Hindi
c. Bilingual
d. the Language of State Concerned

1742. All documents referred to in sub-section (3) of section 3 of the OL Act shall be in

a. English
b. Hindi
c. Both Hindi & English
d. the Language of State Concerned

1743. It shall be the responsibility of the persons…… to ensure the compliance of subsection (3) of section 3 of the OL Act 1963.

a. (A) Signing such documents
b. (B) Writing such documents
c. (C) Group Officer
d. (D) Hindi Officer

1744. Where an employee desires any order or notice relating to service matters (including disciplinary proceedings) required to be served on him to be in Hindi, or as the case may be, in English, it shall be given to him in

a. (A) English
b. (B) Both Hindi & English
c. (C) Hindi
d. (D) the desired Language

1745. Any Application, appeal or representation, when made or signed in Hindi, shall be replied to in

a. English

b. Hindi
c. Bilingual
d. The Language of State Concern

1746. If any question arises as to whether a particular document is of a legal or technical nature, it shall be decided by the

a. Head of the Department
b. Group officer concerned
c. Branch Officer concerned
d. Hindi Officer

1747. An employee shall be deemed to possess proficiency in Hindi if he has passed the Matriculation or any equivalent or higher examination with …… as the medium of examination.

a. English
b. Hindi
c. Urdu
d. The Language of State Concerned

1748. An employee shall also be deemed to possess proficiency in Hindi if he has taken …….. as an elective subject in the degree examination or any other examination equivalent to or higher than the degree examination.

a. English
b. Hindi
c. Urdu
d. The Language of State Concerned

1749. An employee shall be deemed to have acquired a working knowledge of Hindi if he has passed the Matriculation or an equivalent or higher examination with …….as one of the subjects.

a. English
b. Hindi
c. Urdu
d. The Language of State Concerned

1750. An employee shall also be deemed to have acquired a working knowledge of Hindi if he has passed the …… conducted under the Hindi Teaching Scheme of the Central Government.

a. Pragya
b. Praveen

c. Prabodh
d. Pragya/Praveen/Prabodh exam specified by the Govt. as per Group A/B/C

1751. All manuals, codes and other procedural literature (printed or cyclostyled as the case may be) relating to Central Government offices shall be published in
a. English
b. Hindi
c. Hindi & English
d. Hindi and English in diglot form

1752. The forms and headings of registers used in any Central Government office shall be in
a. English
b. Hindi
c. Hindi & in English
d. Hindi and English in diglot form

1753. All name-plates, sign-boards, letter-heads and inscriptions on envelopes and other items of stationery written, printed or inscribed for use in any Central Government office, shall be in
a. English
b. Hindi
c. Hindi & in English
d. Hindi and English in diglot form

1754. It shall be the responsibility of the ……of each Central Government office to ensure that the provisions of the OL Act and the OL Rules are properly complied with.
a. Administrative Head of the Department
b. Group officer concerned
c. Branch Officer
d. Hindi Officer

1755. Notwithstanding anything contained in rules the Central Government may, by order specify the notified offices where Hindi alone shall be used for noting, drafting and for such other official purposes as may be specified in the order by employees who possess proficiency in Hindi.
a. 8(1) of OL rules 1976
b. Rule 8(2) of OL rules 1976
c. 8(4) of OL rules 1976
d. 8(3) of OL rules 1976

1756. Union Territory of Andaman and Nicobar Islands is under

a. Region 'A'
b. Region 'B'
c. Region 'C'
d. Exempted from any Region limits

1757. The provisions of section 6 and section 7 of the OL Act 1963 shall not apply to the State of

a. Jammu and Kashmir
b. Tamil Nadu
c. Nagaland
d. None

1758. The names of the Central Government offices, the staff whereof have acquired a working knowledge of Hindi, shall be notified in the Official Gazette under rule ……

a. 10(1) of OL rules 1976
b. Rule 10(2) of OL rules 1976
c. 10(3) of OL rules 1976
d. 10(4) of OL rules 1976

1759. …… might be co-opted as Member-Secretary to the Selection/Purchase Committee of the Libraries in the attached and subordinate offices.

a. Branch Officer
b. Group Officer
c. Secretary
d. Hindi Officer

1760. The Central Government may, if it is considered necessary to do by general or special order exempt any Central Government office from all or any of the provisions of the …… of OL Rules 1976.

a. Rule 11
b. Rule 12
c. Rule 10
d. Rule 8

1761. As per Section 2 (b) of OL Act 1963 'Hindi' means-

a. Bhojpuri
b. Khari Boli
c. Saurshaini

d. Hindi in Devanagari Script

1762. The …… shall be used for purposes of communication between the Union and a State which has not adopted Hindi as its Official Language.

a. English language
b. Hindi language
c. Urdu language
d. Concerned State Language

1763. From the given below which document is mandatory to be issued both in Hindi and English Language?

a. General Orders
b. Branch Orders
c. Notes
d. Letters issued to region area

1764. The Committee on Official Language shall consist of

a. 20 Members
b. 30 Members
c. 40 Members
d. 50 Members

1765. It shall be the duty of the Committee to review the progress made in the use of Hindi for the official purposes of the Union and submit a report to the …… making recommendations thereon.

a. Minister of Home Affairs
b. Prime Minister
c. OL Department
d. President

1766. The Committee on Official Language shall consist of …… Members from Lok Sabha

a. 10 Members
b. 15 Members
c. 20 Members
d. 30 Members

1767. The Committee on Official Language shall consist of …… Members from Rajya Sabha

a. 10 Members
b. 15 Members

c. 20 Members
d. 30 Members

1768. The directions of the President on the report submitted by the Committee on Official Language shall not be inconsistent with the ……

a. Section 3 of OL Act 1963
b. OL Rules 1976
c. View of home Minister
d. View of Prime Minister

1769. The Ministry of……..may provide an authorized Hindi translation of Parliamentary legislation.

a. Home Affairs
b. Law
c. Parliamentary Affairs
d. Personnel, Public Grievances and Pensions

1770. "As the medium of examination of 'All-India Services and higher Central Services' both Hindi and English shall be available at the option of the candidate" This option has been given under the authority of

(A) Section 3 of OL Act 1963
(B) Rule 6 of OL Rules 1976
(C) Para 9 of the President's Orders 1960
(D) Para 10 of the President's Orders 1960

1771. The Chairman of the Council of States or Speaker of the House of the People, or person acting as such, as the case may be, may permit any member who cannot adequately express himself in Hindi or in English to address the House in

(A) any Regional Language
(B) his mother tongue
(C) the Language of his State
(D) any foreign Language

1772. 7'The official language of the Union shall be Hindi in Devanagari Script' is mentioned in

(A) Sec. 2 (b) of OL Act 1963
(B) OL Rules 1976
(C) the President's Orders 1960
(D) Article 343 (1) of the Constitution

1773. Which Section from following authorized the President to issue Orders 1960 on the report of Official Language Commission?

(A) OL Act

(B) Rule 6 of OL Rules

(C) The President himself being an Authority

(D) Article 344 (6) of the Constitution

1774. Language provisions are mentioned in the Article …….in the Constitution of India.

a. (A) 333 to 343
b. (B) 343 to 345
c. (C) 343 to 350
d. (D) 343 to 351

1775. Directive for development of the Hindi language are mentioned in the Article-

a. (A) 343
b. (B) 345
c. (C) 351
d. (D) 365

1776. All the languages included in the Eighth Schedule to the Constitution and English shall be permitted as alternative media for the All India and higher Central Services examinations" is mentioned in the

a. (A) Para 4(A) of the Official Language Resolution, 1968
b. (B) Rule 3(1) of OL Rules 1976
c. (C) Section 3 (2) of OL Act 1963
d. (D) Article 350 of the Constitution of India

1777. Compulsory knowledge of either Hindi or English shall be required at the stage of selection of candidates for recruitment to the Union services is mentioned in the

a. (A) Para 4 (B) of the Official Language Resolution, 1968
b. (B) Rule 3(1) of OL Rules 1976
c. (C) Section 3 (2) of OL Act 1963
d. (D) Article 350 of the Constitution of India

1778. Which item from following authorizes the Ministry of Home Affairs for the preparation and implementation of annual programme that is concerned with preparatory measures for facilitating the progressive use of Hindi?

a. (A) OL Act 1963
b. (B) OL Rules 1976
c. (C) The Ministry of Home Affairs itself being an Authority

d. (D) Para 14 of the President's Order 1960 '

1779. The Eighth Schedule of the Constitution specifies ……. major languages of India besides Hindi, and it is necessary in the interest of the educational and cultural advancement of the country that concerted measures should be taken for the full development of these languages;

a. (A) 14
b. (B) 18
c. (C) 22
d. (D) 24

1780. "In interview for recruitment, option of Hindi medium should be also available along with English" is mentioned in

a. (A) Section 3(3) of OL Act 1963
b. (B) Rule 6 of OL Rules 1976
c. (C) Para 12 of the President's Order 1960
d. (D) Presidential Orders on Para 22 (E) of the 3rd part of the Report of Committee of Parliament

1781. Which of the following provisions compels the Head of the Office to attend the Meeting of TOLIC

a. (A) Section 9 of OL Act 1963
b. (B) Para 10 of the President's Order 1960
c. (C) Presidential Orders on Para 16.5 (i) of the 7th part of the Report of Committee of Parliament
d. (D) There is no compulsion to attend such meetings by the Head of the Offices

1782. "The headings of the registers available in all the Govt. Offices and of the service books of all categories of officers and employees should be bilingual and the entries therein should be made in Hindi as far as possible" is mentioned in

a. (A) Section 3 of OL Act 1963
b. (B) The President's Order 1960
c. (C) Presidential Orders on the 4th part of the Report of Committee of Parliament
d. (D) There is no compulsion to follow the above in the region 'C' Offices

1783. Which of the following is true for variable names in C?

a. a) They can contain alphanumeric characters as well as special characters
b. b) It is not an error to declare a variable to be one of the keywords(like goto, static
c. c) Variable names cannot start with a digit

d. d) Variable can be of any length148)Which is valid C expression?

1784. The Government of India has instituted an award for the original writing of books in Hindi by its (including retired) employees.

a. (a) Maithilisharan Gupta Award Scheme
b. (b) Rajbhasha Gaurav Award Scheme
c. (c) Premchand Award Scheme
d. (d) Railway Minister's Award Scheme

1785. How many training courses are prescribed for language training of central government employees?

a. (a) Two
b. (b) Three
c. (c) Four
d. (d) Five

1786. Regarding the use of language of which institution is provided for in Article 343 of the Constitution?

a. (a) Legislature
b. (b) Legislative Assembly
c. (C) Legislative
d. (d) Supreme Court

1787. How many employees/officers are awarded under Railway Board's Rajbhasha Individual Cash Award Scheme from Zonal Railway everyear?

a. A)Five
b. B)Three
c. C) Two
d. D) seven

1788. What is the amount of prize money given under the Rajbhasha Individual Cash Award Scheme?

a. A)1800
b. B)1250
c. C)1400
d. D) 1500

1789. How many prizes are given under the Collective Cash Award Scheme for doing official work in Hindi?

a. A)Three
b. B)Two
c. C)One
d. D) Five

1790. Who is the Chairman of Central Hindi Samiti (Committee)?

a. **A) Prime Minister**
b. B) Home Minister
c. C)Education Minister
d. D) Minister of State for Home Affairs

1791. The Central Hindi Samiti (Committee) comes under which Ministry?

a. **a) Ministry of Home Affairs**
b. b) Ministry of Education
c. c) Ministry of Culture
d. d) Ministry of Information and Broadcasting

1792. After Independence, initially which Ministry was entrusted the duty of training Central Government Staff in Hindi?

a. A) Ministry of Home Affairs
b. **B) Ministry of Education**
c. C) Ministry of Labour and Employment
d. D) Ministry of Personnel, Public Grievances and Pension

1793. Which committee review the progress made in the propagation of Hindi in a particular Ministry/Department?

a. A) Official Language Committee
b. **B) Hindi Advisory Committee**
c. C) Central Hindi Committee
d. D) Parliamentary Committee

1794. When was the Parliamentary Committee on Official Language constituted?

a. A) 1955
b. B) 1965
c. **C) 1975**
d. D) 1985

1795. How many members are there in the Parliamentary Committee on Official Language?

a. A) 20
b. B) 25
c. **C) 30**
d. D) 35

1796. How many Lok Sabha members are there in the Parliamentary Committee on Official Language?

a. **A) 20 members**
b. B) 25 members
c. C) 30 members

d. D) 35 members

1797. At present, how many Sub-Committees are there in the Parliamentary Committee on Official Language?

a. A) 3 Sub committees
b. **B)** 6 Sub committees
c. C)2 Sub committees
d. D)1 Sub committees

1798. Which Sub-Committee of Parliamentary Committee on Official Language, inspects the offices of Railway Ministry?

a. A) 1st Sub committees
b. B) 7th Sub committees
c. C) 3rd Sub-Committee
d. D) 2nd Sub-Committee

1799. What is the expansion for OLIC used by Dept. of Official Language?

a. A) Official Language Inspection Committee
b. B) Official Language Implementation Committee
c. C) Official Language Improvement Committee
d. D) Official Language Investigation Committee

1800. What is the main duty of Official Language Implementation Committee?

a. A) To promote English language
b. B) To inspect offices for official language implementation
c. C) To translate all documents into regional languages
D) To conduct Hindi language courses

1801. Who is the Chairman of the Divisional Official Language Implementation Committee?

a. A) Divisional Railway Manager
b. B) District Magistrate
c. C) Senior Superintendent of Post Office
d. D) All India level officers

1802. Who is the Chairman of the Zonal Official Language Implementation Committee?

a. A) General Manager
b. B) Chief Minister
c. C) Home Minister
d. D) Prime Minister

1803. Who is made as the Chairman of the Town Official Language Implementation Committee Constituted? in major cities?

a. A) District Magistrate

b. B) Senior Superintendent of Police
c. C) Commissioner/Deputy Commissioner
d. D) Municipal Commissioner

1804. In which year did the Constituent Assembly accept Hindi as the official language of independent India?

a. (a) January 26, 1950
b. (b) August 15, 1947
c. (c) August 9, 1972
d. (d) September 17, 1979

1805. In which year was the Official Languages Act created?

a. (a) January 15, 1963
b. (b) April 10, 1965
c. **(c) May 10, 1963**
d. (d) June 13, 1967

1806. The amendment to the Official Languages Act, 96 occurred in which year?

a. (a) 1961
b. (b) 1967
c. (c) 1965
d. (d) 1966

1807. Who is the chairman of the Parliamentary Official Language Committee?

(a) Minister of Finance
(b) Minister of Agriculture
(c) Minister of Railways
(d) Minister of Home Affairs

1808. How many sub-committees does the Parliamentary Official Language Committee have?

(a) 01 sub-committee
(b) 02 sub-committees
(c) 03 sub-committees
(d) 07 sub-committees

1809. In which year was the first amendment made to the Official Language Rules, 1976?

(a) 1980
(b) 1988
(c) 1989

(d) 1990

1810. How many sections are there in the Official Languages Act, 1963?

(a) 08
(b) 09
(c) 10
(d) 11