JNTU ONLINE EXAMINATIONS [Mid 2 - SGP]

1. Magnetizing in-rush phenomena occur in
a. Large transformer primary only, when the transformer is switched on b. Large transformer primary when a 3-phase fault occurs
in a secondary
c. Large transformer primary only when the transformer is switch on in the primary
d. Large transformer primary only when the transformer is switch on in the primary and
secondary
2. For the protection of transformer, harmonic restraint is used
to guard against
a. Magnetizing in-rush current
b. Unbalanced operation
c. Lightning
d. Switching over voltage
3. The inrush current of a transformer at no load is maximum, if
the supply voltage is switched on
a. At peak voltage value
b. At zero voltage value
c. At half voltage value
d. At 0.866 time voltage value
4. The magnetizing in-rush current in a transformer is rich in
a. Third harmonic component
b. Fifth harmonic component
c. Second harmonic component
d. All odd harmonic component
5. In Merz-Price percentage differential protection of a Δ-Y transformer, the CT secondaries connection in the primary and
secondary winding of the transformer would be in the form of
a. Δ-Y
b. Y- Δ
c. Δ - Δ
d. Y-Y
6. A 10 kVA, 400 V/200 V single phase transformer with 10 % impedance draws a steady short-circuit line current of
a. 50 A
b. 150 A
c. 250 A
d. 350 A
7. For differential protection of power transformer (Δ - Δ) the current transformer will have
a. Δ - Δ Connection
b. Y- Δ Connection
c. Y-Y Connection
d. Δ -Y Connection
8. To prevent the maloperation of differentially connected relay
while energizing a transformer, the relay restraining coil is biased with
a. Second harmonic current
b. Third harmonic current
c. Fifth harmonic current
d. Seventh harmonic current
9. For preventing the maloperation of Merz-Price protection scheme on in rush of the magnetizing current
a. The relay sensitivity is reduced by employing a shunt
b. The time lag is provided in the relay
c. The relay restraint coli is biased with second harmonic current
d. The relay restraint coli is biased with ninth harmonic current
10. A 3 phase transformer having line voltage ratio of 0.4/11 kV
is connected in star-delta and protective transformer on the 400 V side have a current ratio of 500/5. The ratio of protective transformer on 11 kV side is
a. 10.5:1
b. 10.5:3
c. 10.5:2
d. 10.5:5
11. Which of the following is a problem associated with differential protection
a. Frequency
b. Mismatch characteristics of CTs
c. Power factor
d. Unbalance in transformers
12. The percentage differential protection of a transformer protects the transformer against
a. External faults
b. Magnetizing inrush current
c. Overloading
d. Internal phase to phase or phase to earth faults
13. The connections of CT are opposite to that of transformer winding so that current in the pilot wires of two are / have
a. Same Phase
b. Opposite in phase
c. A phase difference of 60^0
d. A phase difference 90^0
14. A 100 MVA, 132/6.6 kV, power transformer is connected in delta- star. If the circulating current in the pilot wires of the differential protection scheme is 5 A, then ratio of CT on LT side is
a. 874.75:5
b. 874.75 :5
c. 874.75:
d. 874.75:5
15. A 3 phase transformer of 220/11000 line volts is connected in star-delta. The protective transformer on the 220 V side have
a current ratio of 600/5. The ratio of protective transformer on 11 kV side is
a. 1.385:10
b. 1.385:3
c. 1.385:1
d. 1:1.385
16. A three phase 11/66 kV Delta/Star transformer, protected by
Merz-Price protection scheme has CT ratio of 400/5 on LV side.
The ratio of CT on HV side will be equal to
a. 1:23
b. 23:1
c. 23:
d. :23

17. A three phase 33/6.6 kV Star/ Delta transformer is protected
by Merz-Price protection scheme. If the CT on the low voltage side have a ratio of 300/5, then the ratio of CT on
HV side will be equal to
a. 60:5
b. 5 :60
c. 300:
d. :12

18. A three phase, 200 kVA, 11/0.4 kV, transformer is Delta/Star.
The protective transformers on the 0.4 kV side have turn ratio of 500/5. The CT ratio on HV side is
a. 18.18:5.56
b. 18.18:1.66
c. 18.18:8.66
d. 8.66:18.18

19. A star-delta 11/6.6 kV transformer is protected by Merz price protection scheme. The CT ratio on the delta side is 600/5
A. The CT ratio on star side is
a. 360 :5
b. 360:5
c. 360:5
d. 5:360

20. A 100 MVA, 132/6.6 kV, power transformer is connected in delta- star. If the circulating
current in the pilot wires of the differential protection scheme is 5 A, then ratio of CT onLT side is
a. 47.73:5
b. 47.73:1
c. 47.73:5
d. 47.73:5

21. A three phase 66/11 kV star-delta transformer is protected by Merz-Price protection scheme. The CTs on the LT side is have a ratio of 420/5 A. The ratio of CT on HV side will
be equal to
a. 24.25:1
b. 23.25:1
c. 23:2
d. 1:24.25

22. A 100 MVA, 132/6.6 kV, power transformer is connected in delta- star. CT is connected in
a. delta-delta
b. Delta-star
c. Star - delta
d. star-star

23. Buchholz relay is a
a. oil actuated relay
b. current actuated relay
c. gas actuated relay
d. oil temperature actuated relay

24. Buchholz relay is
a. Placed in the Conservator tank
b. Located in the transformer tank itself
c. Connected in the pipe connecting main tank of the transformer and conservator
d. Installed in the circuit breaker

25. Buchholz relay is used for
a. Carrier protection
b. Transformer protection
c. Generator protection
d. Motor Protection

26. Buchholz relay can detect the faults _ _ _ _ _ _ _ _ _ oil level of the transformer
a. Below
b. Above
c. Either above or below
d. Outside the transformer

27. The gas evolved when the fault occurs is
a. Oxygen
b. Nitrogen
c. Hydrogen
d. SF_6

28. Buchholz relay is used in
a. Air cooled transformers
b. Instrument transformers
c. Oil immersed power transformers of rating above 500 kVA
d. Distribution transformers

29. Buchholz relay is used for
a. Protection of transformers against all external faults
b. Protection of transformers against all internal and external faults
c. Protection of Induction motors
d. Protection of transformers against all internal faults

30. Buchholz relay is used for protection of
a. Bus-bars
b. Transformers
c. Relays
d. Circuit breakers

31. The relay used for the protection of power transformer against internal faults is
a. Buchholz relay
b. Mho relay
c. Induction Relay
d. Impedance relay

32. Buchholz relay has
a. One mercury switch
b. Two mercury switches
c. Three mercury switches
d. 4 mercury switches

33. The operating time of the instantaneous relay is in the order
of
a. Milliseconds
b. Nanoseconds
c. Few milliseconds
d. Microseconds

34. Which is the pilotless protection method for feeder line?
a. Differential protection
b. Carrier current protection
c. Time graded protection
d. Over current protection

35. An earth conductor provided on the top of the transmission
line does not provides
protection against
a. Direct lightning stroke
b. Traveling waves
c. Electro statically induced voltage due to the a charged cloud
d. Corona

36. Graded time lag over-current relaying without directional features can be employed for
protection of
a. Ring mains
b. Parallel feeders
c. Radial feeders
d. Service mains

37. Definite time over current relays are used for
a. Transmission lines
b. Mesh system
c. Radial system
d. Parallel lines

38. In inverse time over current relays the time current Characteristics are
a. Parabolic
b. Hyperbolic
c. Linear
d. Straight Line

39. Which of the relays are used for phase faults on long line
a. Impedance

b. Reactance
c. Over current
d. Translay

40. In the time grade over current protection, which of the following discrimination is incorporated?
a. Current
b. Time
c. Voltage
d. Power

41. A transmission line is not protected by
a. Distance protection
b. Current graded over current protection
c. Inrush current protection
d. Time graded over current protection

42. The most commonly used method for the protection of 3-phase feeder is
a. Time graded protection
b. Differential protection
c. Reverse power protection
d. Over current protection

43. In a carrier current protection the purpose of the wave trap is for
a. Trapping power frequency waves**b. Trapping high frequency waves entering into generators/ transformer unit**
c. Trapping of low frequency voltage waves
d. Trapping low frequency waves

44. For complete protection of a 3- phase transmission line we require
a. Three phase and three earth faults relay
b. Three phase and two earth fault relay
c. Two phase and two earth faults relay
d. Two phase and one earth fault relay

45. Pilot-wire protection scheme is most economical and provides high speed relaying
a. Short length of lines up to 15 m
b. Medium length of lines up to 60 m
c. Long length of lines up to 200 m
d. Short, medium and long lines of lengths between 15 km to 200 km

46. Carrier current protection scheme is normally used for protection of
a. HV cables only
b. HV transmission lines only
c. For both HV cable and transmission line
d. Distribution lines only

47. For 3-phase feeder protection in a distribution network the number of earth fault relays required is
a. 1
b. 3
c. 2
d. 4

48. First zone distance relay protects a transmission line section up to
a. Its full length
b. 50 of its full length
c. 25 % of its full length
d. 80 % of its full length

49. Time graded protection of a radial feeder can be achieved by using
a. Definite time relays
b. Inverse time relays
c. Both inverse and definite time relay
d. Inverse current relay

50. The frequency of carrier in the carrier current pilot scheme is in the range of
a. 1kHz to 10kHz
b. 10kHz to 25kHz
c. 25 kHz to 50 kHz
d. 50kHz to 500kHz

51. Adjustable resistor are connected in the pilot wires in order to
a. Change the phase of the current flowing through the relay
b. Get equipotential points on pilot wires
c. Reduce current flowing through the relay
d. Increase current flowing through the relay

52. Signal mixing transformers are used in
a. Induction disc type over current relay
b. Direction sensitive distance relay
c. Pilot wire feeder protection
d. Plain differential relay

53. In a balanced voltage pilot wire protection scheme if the pilot circuit gets opened, the relay will
a. Fail to trip on internal faults
b. Trip on full load
c. Trip instantaneously on external faults
d. Trip on internal faults

54. In a balanced voltage pilot wire protection scheme if the pilot circuit gets shirt circuited the relay will
a. fail to trip on internal faults
b. fail to trip on external faults
c. trip on full load
d. trip instantaneously

55. In an overhead transmission line, wave traps are used for the detection of
a. The faults current signals
b. The fault voltage signals
c. Carrier signals
d. Fault power signals

56. The line trap in the case of carrier current pilot consists of
a. Series L-C circuit
b. Series R-L-C circuit
c. Parallel L-C circuit
d. Parallel R-C circuit

57. A line trap in a ling transmission line is used to
a. Improve the power factor
b. Dampen the over voltage oscillation
c. Confine the carrier signals in the line
d. Protect the line against direct lightning stroke

58. protection is used for protection of transmission line is a unit type protection
a. Distance
b. Current graded over current
c. Carrier current
d. Time graded over current

59. If the fault current is 2 kA, the relay setting is 50 % and the CT ratio is 400/5, the PSM will be
a. 25
b. 15
c. 50
d. 12.5

60. Summation transformers are used in
a. Carrier relays
b. Distance relay
c. Pilot wire relays
d. Earth fault relay

61. Coupling capacitors used in carrier protection have values usually in the range if
a. 1 to 10μF
b. 100 to 500 μF
c. 0.01 to 0.1μF
d. 100 to 500 pF

62. The line trap unit employed in carrier current relaying
a. Offers high impedance to 50Hz power frequency signals
b. Offers high impedance to carrier frequency signals
c. Offers low impedance to carrier frequency signals
d. Offers low impedance to carrier frequency signals and high impedance to 50Hz power Frequency signals

63. In a 3 step distance protection the reach of the three zones of the relay at the beginning of the First line typically extends into
a. 100 % of the first line, 50 % of the second line and 20 % of the third line
b. 80 % of the first line, 50 % of the second line and 20 % of the third line
c. 80 % of the first line, 50 % of the second line and 10 % of the third line
d. 50 % of the first line, 50 % of the second line and 20 % of the third line

64. Distance protection scheme is preferred over graded time lag over current protection in HV and EHV lines because
a. It is faster in operation
b. It is simple
c. It is cheaper in cost
d. It is flexible

65. Differential relays are used to protect the equipment againsta. Internal faults
b. Reverse current
c. Over current
d. Back up protection

66. Which of the following section can be employed for bus bars?
a. Water pies
b. Insulators
c. Cables
d. Metal tubes

67. The main factor in favor of the use of aluminum as bus-bar material is its
a. Low cost
b. Low density
c. Low melting point
d. High resistivity

68. The material used for bus-bars should have
a. Low resistivity
b. Lower softening temperature
c. High resistivity
d. High reactance

69. Bus bar zones faults are generally
a. Phase to phase faults
b. Single line to ground faults
c. Double line to ground faults
d. three phase short circuits

70. A bus coupler circuit breaker is utilized in a substation for
a. Joining the transmission line with station bus bar
b. Joining the main and transfer bus in a station
c. Joining the generator with transfer
d. Joining the neutral of the generator with earth

71. Large internal faults are protected by
a. Mho and Ohm relays
b. Merz price percentage differential protection
c. Horn gaps and temperature relays
d. Earth fault and positive sequence relays

72. Which of the following bus-bar arrangements are more expensive?
a. Ring bus bar arrangement
b. Single bus bar arrangement
c. Duplicate bus bar arrangement
d. Double main and transfer bus bar arrangement

73. Bus coupler is very essential in
a. Ring bus bar arrangement
b. Single bus bar arrangement
c. Main and transfer arrangement
d. Double bus bar and double breaker arrangement

74. A bus bar is rated by
a. Current only
b. Voltage only
c. Voltage, Current and frequency
d. Voltage, Current, frequency and short circuit current

75. Ear thing of Electrical Equipment Is necessary for the Protection against
a. Over loading
b. Voltage fluctuations
c. Danger of electric Shock
d. High conductor temperature

76. The earth wire should be
a. Good conductor of electricity
b. Mechanically Strong
c. Mechanically Strong But bad
d. Must be good conductor and mechanically strong

77. Earth wires are made of
a. Copper
b. Aluminum
c. Iron
d. Galvanized standard steel

78. The earth transformers are used to
a. Avoid the harmonics in the transformers
b. Measure the voltage
c. Provide artificial neutral ear thing where neutral point is not accessible
d. Improve stability of the system

79. Coefficient of earthing is defined as the ratio of
a. Highest phase to ground voltage of healthy phase to phase to phase voltage
b. Highest phase to ground voltage of unhealthy phase to phase to phase voltage
c. RMS value to peak value of the phases
d. Maximum value to RMS value of the phases

80. Earthing means
a. Connecting a non-current carrying parts to a massive earth point
b. Connecting a current carrying parts to a massive earth point
c. Connecting a non-current carrying and current carrying parts to a massive earth point
d. Shorting of all phase wires with ground

81. The size of the earth wire is determined on the basis of
a. Voltage of the service line
b. Current carrying capacity of the service line
c. Atmospheric conditions
d. Resistance of the service line

82. The earth wire should not be of size smaller than
a. 10 SWG Copper
b. 8 SWG Copper
c. 6 SWG Copper
d. 4 SWG Copper

83. Zero sequence currents are absent In case of
a. Ungrounded systems
b. Solid grounded systems
c. Resistance grounded systems
d. Reactance grounded systems

84. During arcing grounding conditions, the phase voltage of the system rises to _ _ _ _ _ _ __ _ times its normal value
a. 20
b. 15
c. 5 to 6
d.

85. Isolated neutral system has the disadvantages of
a. Less voltage oscillations
b. Current in the system is very large
c. Persistent arcing ground
d. negligible ground fault current

86. Ear thing of Electrical Equipment Is necessary for the Protection against
a. Over loading
b. Voltage fluctuations
c. Danger of electric Shock
d. High conductor temperature

87. The earth wire should be
a. Good conductor of electricity

b. Mechanically Strong
c. Mechanically Strong But bad
d. Must be good conductor and mechanically strong

88. Earth wires are made of
a. Copper
b. Aluminum
c. Iron
d. Galvanized standard steel

89. Grounding is generally done at the
a. Receiving end
b. Supply end
c. The middle of receiving and supply endd. 1/3 from supply end

90. Grounding transformer in a system is usually connected is
a. delta/delta
b. star/delta
c. zigzag/delta
d. star/star

91. The advantage with neutral grounding is that
a. Over voltages due to lightning is discharged to grounded
b. Over voltages due to switching is discharged to grounded
c. Over voltages due to Power frequency is discharged to grounded
d. Over voltages due to power frequency and switching are discharged to grounded

92. One of the advantages with neutral grounding is
a. Voltage of phases is greater than line to ground voltages
b. Voltage of phases limited to line to ground voltages
c. Currents of all phases is greater than line to ground currents
d. Currents of all phases is less than line to ground currents

93. In an un grounding system, when there is a line to ground fault on one of the phase of a 3-phase system the voltages of other phases are
a. Remains same
b. Becomes Zero
c. Becomes 1.732 time phase voltage
d. One phase voltage is 1.732 times phase and other phase voltage zero

94. The advantage of isolated neutral is
a. Interference with communication lines are reduced because zero sequence current is zero
b. Interference with communication lines are reduced because Negative sequence current is zero
c. Interference with communication lines are reduced because Positive sequence current is zero
d. Interference with communication lines are reduced because positive and negative sequence currents is zero

95. Life the equipment will improved if
a. Neutral is grounded
b. Neutral is isolated
c. Up to certain voltage
d. Up to some current level

96. Peterson coil is used for
a. Grounding of system neutral
b. To reduce fault current
c. Connecting two interconnected system
d. For shunt compensation of transmission lines

97. The method of neutral grounding affects the
a. Positive sequence net work
b. Negative sequence network
c. Zero sequence network
d. Positive sequence net work & Negative sequence network

98. Arcing on transmission lines is prevented by connecting a/an _ _ _ _ _ _ _ _ _ _ in neutral
a. Inductor b. Resistor c. Capacitor d. Protective relay

99. The advantages of neutral ear thing is
a. Safety of personnel
b. Reduction of earth fault current
c. Elimination of arcing ground
d. Steady state stability purpose

100. Neutral ear thing is mainly provided for
a. The safety of personnel from electric shock
b. To reduce the current
c. Increasing the voltage stress on lines and equipment with respect to earth
d. To reduce the impedance

101. Effective grounding is also known as
a. Resistance grounding
b. Reactance grounding
c. Solid grounding
d. Voltage Transformer grounding

103. For a solidly grounded system the maximum line to ground voltage when the fault occurs will not exceed _ _ _ _ _ _ _ _ _ _ _ _ _ on healthy phases
a. 80 % line voltage
b. 90 % line voltage
c. 50 % line voltage
d. 40 % line voltage

104. In a solid grounding system, when there is a line to ground fault on one of the phase of a 3-phase system the voltages of other phases are
a. Remains same
b. Becomes Zero
c. Becomes 1.732 time phase voltage
d. One phase voltage is 1.732 times phase and other phase voltage zero

105. For a solidly grounded system the ratio of zero sequence resistance to positive sequence reactance is
a. Greater than 1
b. Not greater than 1
c. Equal to 1
d. Not greater than 2

106. The size and cost of the transformer is reduced, with the solid grounding because
a. Insulation requirements are less
b. Voltages are reduced
c. Currents are reduced
d. losses are reduced

107. Which of the following neutral systems will require the lightning arrestor of least voltage rating
a. Insulated
b. Solidly earthed
c. Resistance earthed
d. Reactance earthed

108. For a solidly grounded system the ratio of zero sequence reactance to positive sequence reactance is
a. Not greater than 3
b. Greater than 3
c. Equal to 3
d. Not greater than 4

109. The solid grounded system is
a. Less expensive than any other grounded system
b. More expensive than any other grounded system
c. Equal to any other grounded system
d. Depends on the range of voltage

110. Solid ear thing is done for voltage below
a. 400V b. 600V **c. 33KV** d. 66KV

111. Circuits with large charging currents _ _ _ _ _ _ _ _ _ _ type of grounding is used
a. Solid grounding
b. Resistance grounding
c. Reactance grounding
d. Resonant grounding

112. The grounding which effectively reduces the interference with communication circuits is
a. Solid grounding
b. Resistance grounding
c. Resonant grounding

d. Reactance grounding

113. In resistance grounding, the power loss is _ _ _ _ _ _ _ _ compare to other methods

a. More

b. Less

c. Zerod. Average compare to other groundings

114. The performance of reactance grounding is

a. Above the effective grounding

b. Below the resonant grounding

c. Between the solid grounding and resonant grounding

d. Best of all groundings

115. For the reactance grounding it is essential that the magnitude of the earth fault current should be at least _ _ _ _ _ _ _ _ _ _ % of the 3 phase fault current

a. 85

b. 95

c. 25

d. 75

116. Resistance ear thing is employed for voltages between

a. 3.3 and 11KV

b. 11 and 33KV

c. 33 and 66KV

d. 66 and 132KV

117. Which one of the following grounding methods used to reduce the tower footing resistance where earth resistance is low

a. Single driven rod

b. Multiple rods

c. Counter poises

d. Plates

118. The resistance value in the resistance grounding is

a. Any value can be inserted

b. less than the system reactance

c. Equal to the system reactance

d. Greater than the system reactance

119. The resistance grounding is _ _ _ _ _ _ _ _ _ _ than solid grounding

a. Expensive

b. Cheaper

c. Equal in cost point of view

d. Con't compare

120. Earthing of transformer neutral through reactance will improve its

a. Transient stability

b. Steady state stability

c. Power stability

d. Voltage stability

121. Transient over voltage are more in case of

a. Solid grounding

b. Resistance grounding

c. Resonant grounding

d. Reactance grounding

122. A 132 kV, 3 phase, 50 Hz, transmission line of 192 km long consists of three conductors of effective diameter 20 mm, arranged in a vertical plane with 4 m spacing and regularly transposed. If the resonant grounding is provided with system, then the inductance of arc suppression coil is

a. 1.97 H

b. 1.97 m H

c. 197 H

d. 19.7 H

123. A 132 kV, 3 phase, 50 Hz, transmission line of 192 km long consists of three conductors of effective diameter 20 mm, arranged in a vertical plane with 4 m spacing and regularly transposed. If the resonant grounding is provided with system, then the MVA rating of arc suppression coil is

a. 93.89 MVA per coil

b. 9.389 MVA per coil

c. 9389 MVA per coil

d. 9.9 MVA per coil

124. 50 Hz, overhead line has line to earth capacitance of 1 micro farad. It is decided to use an earth fault neutralizer. Then the reactance to neutralize the capacitance of 100% of the length of the line is

a. 1061 ohms

b. 1121 ohms

c. 951 ohms

d. 2122 ohms

126. A 33 kV, 50 Hz network has capacitance to neutral of 1.0 μF per phase. The reactance of the Peterson coil is

a. 10.61 ohms

b. 106.1 ohms

c. 1061 .032 ohms

d. 10610 ohms

127. Peterson coil is

a. Air core reactor

b. Iron cored reactor

c. A condenser

d. A transformer

128. Peterson coil grounding is also known as

a. Solid grounding

b. Resistance grounding

c. Resonant grounding

d. Reactance grounding

129. Peterson coil is provided with tapings to vary

a. Inductance

b. Resistance

c. Current

d. Capacitance

130. Neutral grounding is provided at

a. Source end

b. Load end

c. Any location

d. Middle

131. A 50 Hz, overhead line has line to earth capacitance of 1 micro farad. It is decided to use an earth fault neutralizer. Then the reactance to neutralize the capacitance of 90 % of the length of the line is

a. 1061 ohms

b. 1121 ohms

c. 1179 ohms

d. 2122 ohms

132. A 50 Hz, overhead line has line to earth capacitance of 1 micro farad. It is decided to use an earth fault neutralizer. Then the reactance to neutralize the capacitance of 80 % of the length of the line is

a. 1061 ohms

b. 1121 ohms

c. 951 ohms

d. 1326 ohms

133. If a neutral point of any equipment is not available with the system, then through_ _ _ _ _ _ _ _ the neutral is grounded

a. Zig-zag transformer

b. A delta connected transformer

c. A current transformer

d. Potential transformer

134. In voltage transformer grounding

a. Arcing grounds are eliminated

b. Arcing grounds are present

c. Arcing grounds are partially eliminated

d. Not possible

135. The major problem with voltage transformer grounding is

a. Reflections are zero

b. Neutral point acts as Reflection point
c. Too costly
d. Grounding is not satisfactory

136. In a normal grounding practice if the zig-zag transformeris not available, then
a. Star - delta transformer without loading the delta side is used
b. Star - delta transformer with loading the delta side is used
c. Delta - Star transformer with loading the delta side is used
d. Delta - delta transformer with loading the delta side is used

137. For voltage up to 600 V or above 33 kV _ _ _ _ _ _ _ _ _ type of grounding is used
a. Reactance grounding
b. Resonant grounding
c. Resistance grounding
d. Solid grounding

138. For voltage between 3.3 kV to 33 kV _ _ _ _ _ _ _ _ _ _ type of groundings is used
a. Reactance grounding and Resistance grounding
b. Isolated neutral
c. Resonant grounding
d. Solid grounding

139. Generators are normally provided with
a. Reactance grounding
b. Resonant grounding
c. Resistance grounding
d. Solid grounding

140. Synchronous motors are normally provided with
a. Reactance grounding
b. Resonant grounding
c. Resistance grounding
d. Solid grounding

141. In case transformer grounding practice copper losses are
a. Always present
b. Present at the time of fault
c. Present only in night times
d. Present only in day times

142. With the help of Harmonic suppressors
a. Third harmonic currents are reduced to safe value
b. All harmonic currents are reduced to safe value
c. First harmonic currents are reduced to safe value
d. Only even harmonics are eliminated

143. Switching over voltages are more hazardous than lightning surges in case of
a. Low voltage system
b. 33KV system
c. EHV & UHV system
d. 11 KV system

144. Which of the following is the cause for over voltage in power system?
a. Low current
b. High current
c. Resonance
d. Medium current

145. All voltage surges in high voltage installation are classified as
a. Internal over voltages only
b. External over voltages only
c. Internal and external voltages
d. Any power frequency voltage

146. The insulation of modern EHV lines is designed based on
a. The lightning voltages
b. Switching voltages
c. Corona voltage
d. RI voltage

147. If a line, the loading corresponds to the surge impedance loading, the voltage at the receiving end is
a. Greater than sending end
b. Less than sending end
c. Equal to sending end
d. Some times less than and some times greater than sending end

148. Surge impedance of a line can be expressed as
a.
b. (L/C)
c. (C/L)
d. 1/ (LC)

149. During the lightning process on clouds the clouds get charged is
a. Positively or Negative only
b. No charge is induced
c. No relation exists between the lightning and clouds charging
d. Neutral

150. Surge impedance of an over head line is of the order of
a. Ten
b. One
c. Hundreds
d. Thousands

151. Lightning is a huge spark caused by electrical discharge may take place between
a. Clouds and moon
b. Cloud and Sun
c. Cloud and earth
d. Cloud and stars

152. Which of the following is the requirement for the protection power station buildings against direct strokes?
a. Interception
b. Reflection
c. Convection
d. Radiation

153. Which of the following factor should be considered in the design of a transmission line against Lightning with ground wire?
a. Mechanical strength of ground wire
b. Thickness of the wire
c. Colour of the wire
d. Tensile strength of the wire

154. The volt-ampere characteristics of a non-linear resistor used in surge arrester is given by α (where α is the characteristic of the material and taken as greater than 1)
a.
b.
c. $i = k\{ rm\{ v\}\}_2$
d.

155. The energy in a lightning stroke can be as high as
a. 100 units
b. 1000 units
c. 250 units
d. 10 units

156. The equivalent circuit of a surge arrester may be represented as:
a. Capacitor
b. An Inductor
c. Non-linear resistor
d. Resistor

157. The lightning arresters used in power systems to protect electrical equipment against
a. Direct strokes of Lightning
b. Over voltages due to indirect lightning stroke
c. Power frequency over voltages
d. Over currents due to lightning

158. Earthed lightning rods are provided
a. Above overhead lines
b. Above all tall buildings
c. At the substation
d. Near motor and generator terminals

159. The protection against direct lightning strokes and high voltage steep waves is provided by
a. Ground wires
b. Lightning arresters
c. Ground wires and Lightning arresters
d. Earthing of neutral
160. Valve type arresters are also called as
a. Linear diverters
b. Non linear diverters
c. Uniform diverters
d. Thyrite type L.A
161. Which one is most commonly used arrester
a. Thyrite type L.A
b. Valve type L.A
c. Expulsion type L.A
d. Metal oxide L.A
162. The function of lightning arrester is
a. To limit the short circuit fault current
b. To reduce arcing
c. To provide path to high voltage surge to earth
d. To reduce the voltage
163. Consider the following statements. To provide reliable protection for a distribution transformer against over voltages using lightning arresters, it is essential that the
1. Lead resistance is high
2. Distance between transformer and the arrester is small
3. Transformer and the arrester have a common inter connecting ground
4. Spark over voltage of the arrestor is greater than the residual voltage
a. 1, 3 and 4 are correct
b. 2 &3 are correct
c. 2, 3 &4 are correct
d. 1 &4 are correct
164. For protection of rotating machines against lightning surges _ _ _ _ _ _ _ _ _ is used
a. Lightning arrester
b. Lightning conductor and arrester
c. Combination of Capacitor and Lightning arrester
d. Capacitor
165. Impulse ratio of insulators and lightning arrestors should Be

a. Both low
b. High and low respectively
c. Low and high respectively
d. Both high
166. To protect the insulator from arc the distance between the
rod gap and insulator should be
a. More than 1/3 of rod gap length
b. More than 2/3 of rod gap length
c. Less than 1/3 of rod gap length
d. Less than 2/3 of rod gap length
167. The lightning arrester is connected
a. In series with the line
b. Between line and earth
c. To a pole near the line
d. In parallel with the line
168. Location of lightning arrester is near a
a. Generator
b. Transformer
c. Bus- bar
d. Circuit breaker
169. Lightning arrester provides
a. Low impedance path
b. High impedance path
c. Low resistance path
d. High resistance path between line and earth during operation
170. Which of the following is not a protective device against lightning over voltage?
a. Rod Gaps
b. Surge Absorbers
c. Horn Gaps
d. mho Relay
171. In Thyrite lighting arrester the resistance
a. Varies linearly with applied voltage
b. Increases with applied voltage
c. Decreases varies linearly with applied voltage
d. Is high at low currents and low at high currents
172. For proper insulation coordination would ensure that the volt-time characteristic of the equipment will lie _ _ _ _ _ _ _ _ the volt-time characteristic of the protective device.
a. Above
b. Below
c. Coincides
d. Some times below and some above
173. The BIL of a power system is usually chosen as
a. 25 % to 30 % more than the protective level offered by the protective devices (LA)
b. 50 % more than the protective level offered by the protective devices (LA)
c. 5 % to 10 % more than the protective level offered by the protective devices (LA)
d. Highest lightning surge voltage expected
174. The rate of rise of current in lightning stroke is
a. 1 kA/μsec
b. 100 kA/μsec
c. 100 A/μsec
d. 1000 kA/μsec
175. Impulse insulation break down strength of protected equipment must be
a. Greater than that of the protecting device
b. Equal to the protecting device
c. Less than that of the protecting device
d. A constant
176. BIL of a power system is defined as
a. The minimum insulation impulse withstand voltage of any power equipment or apparatus
b. The minimum power frequency withstand voltage of any power equipment or apparatus
c. The maximum power frequency withstand voltage of any power equipment or apparatus
d. The peak value of highest system voltage
177. The impulse ratio of rod gap is
a. Unity
b. Between 1.2and 1.5
c. Between 2 and 2.2
d. Between 1.6 and 1.8
178. The impulse ratio for any particular object is
a. A constant
b. Depends upon shape of wave
c. Circuit inductance
d. Circuit resistance and capacitance
179. The front time and tail time of the impulse wave is
a. In micro-seconds
b. In milli-seconds
c. In seconds
d. In minutes
180. The cumulative probability of 10 kA lightning stroke current (peak) is about
a. 0.6 b. 0.2 c. 0.1 d. 0.98