

Attendant Substation (66/11, 33/11 kV)- Power Distribution Question Bank

Theory Questions:

1. In India, what is the rated frequency of generated electric power?
 - a) 60 Hz
 - b) 50 Hz
 - c) 55 Hz
 - d) 53 Hz
2. Ohm's Law states that.
 - a) $I=VR$
 - b) $V=IR$
 - c) $R=VI$
 - d) All of the above
3. The SI unit of Current is
 - a) Ampere
 - b) Volts
 - c) Ohm
 - d) Farad
4. The electric power is generated at a thermal power plant with a typical voltage of
 - a) 22 kV
 - b) 33 kV
 - c) 44 kV
 - d) 66 kV
5. Voltage level to the end consumer is
 - a) 260/460 V
 - b) 110/240 V
 - c) 310/350 V
 - d) 240/415 V
6. Primary distribution network connects the transmission system with secondary distribution network at a voltage level of
 - a) 66kV
 - b) 415V
 - c) 240V
 - d) 33kV or 11kV
7. Secondary distribution system supplies power to consumer at voltages of
 - a) 220kV
 - b) 110kV
 - c) 415V or 240V
 - d) 66kV

8. Load Factor is defined as the ratio of
 - a) The average power to the maximum demand
 - b) The maximum demand to the average power
 - c) The connected load to maximum demand
 - d) The maximum demand to connected load
9. Star connection is preferred for _____ because it is having a neutral point.
 - a) Short distance power transmission
 - b) Long distance power transmission
 - c) Both (a) and (b)
 - d) None of the above
10. Delta connection is preferred for _____ due to the problem of unbalanced current in the circuit
 - a) Short distance
 - b) Long distance
 - c) Both (a) and (b)
 - d) None of the above
11. Unduly long feeders lead to _____ at consumers end.
 - a) High voltage and high technical losses
 - b) Low voltage and high technical losses
 - c) Low voltage and low technical losses
 - d) High voltage and low technical losses
12. Types of distribution losses are
 - a) Technical losses
 - b) Commercial losses
 - c) Both (a) and (b)
 - d) None of the above
13. In rural areas, which type of feeder system is used
 - a) Radial system
 - b) Interconnected system
 - c) Ring main system
 - d) None of the above
14. Determining causes of operating errors and deciding what to do about it is
 - a) System evaluation
 - b) Equipment selection
 - c) Operation monitoring
 - d) Troubleshooting
15. Every distribution system must carry out periodical review of
 - a) Line losses
 - b) Revenue collections and system defects
 - c) Employee training
 - d) All of the above
16. The grid operations are monitored by

- a) State Load Dispatch Centre
 - b) Regional Load Dispatch Centre
 - c) National Load Dispatch Centre
 - d) None of the above
17. The tariff of power generating companies owned or controlled by the central government is regulated by
- a) CERC
 - b) SERC
 - c) Both (a) and (b)
 - d) None of the above
18. Accident at workplace can be caused by working on unsafe or dangerous equipment such as
- a) Cleaning/greasing or adjusting any of running machine
 - b) Working on machine under off condition
 - c) Using insulated tools
 - d) None of the above
19. Basic fundamental of safety are
- a) Cooperation of all co-workers is essential to avoid accident
 - b) Accident is the result of unsafe working condition and unsafe work
 - c) Use of incomplete or little knowledge is dangerous and may invite accident
 - d) All of the above
20. Hazards occur due to
- a) Inadequate wiring
 - b) Exposed electrical ports
 - c) Wires with bad insulation
 - d) All of the above
21. Tool used on electrical apparatus or equipment should be properly
- a) Insulated
 - b) Not insulated
 - c) Both (a) and (b)
 - d) None of the above
22. Authorized person to issue permit in a substation is
- a) Shift engineer or operation in-charge
 - b) All employees working in substation
 - c) Both (a) and (b)
 - d) None of the above
23. Safety requirement applicable at work include.
- a) Wear personal protective equipment
 - b) Use tools in proper manner
 - c) Both (a) and (b)
 - d) None
24. CO₂ fire extinguisher are designed for
- a) Class B only
 - b) Class B and C

- c) Class C only
 - d) None of the above
25. Class A type of fire extinguisher are used to extinguish fire on
- a) Solid that is not metal
 - b) Flammable liquid
 - c) Flammable gas
 - d) Metals
26. First-aid box contains
- a) Clean and sterilized cotton pads
 - b) Three angle bandage
 - c) Bottle of Dettol or Savlon liquid
 - d) All of the above
27. Mouth to mouth procedure of artificial respiration should be repeated about
- a) 10 to 12 times in a min
 - b) 30 to 32 times in a min
 - c) 50 to 52 times in a min
 - d) 1 to 2 times in a min
28. The undertakings shall provide suitable hoisting apparatus for hauling and carriage of loads above
- a) 500kg
 - b) 50 kg
 - c) 5 kg
 - d) 10 kg
29. The workmen shall be trained in safe methods of handling. They shall avoid
- a) Lifting too quickly and with a jerk
 - b) Lifting while in an awkward position or with a poor footing
 - c) Handling loads which are unwieldy or too heavy or loads which obstruct vision
 - d) All the above
30. Under no circumstances should the released _____ be disposed off by dumping or pouring in sewers or conductor pipes leading into sewers.
- a) Water
 - b) Carbon dioxide gas
 - c) Transformer oil
 - d) None of the above
31. The representative of employee is nominated under regulation
- a) Regulation 4(5)
 - b) Regulation 5(4)
 - c) Regulation 3(4)
 - d) Regulation 4(3)
32. Things needed to succeed in a team player
- a) Recognize your role
 - b) Take ownership of the team goal
 - c) Earn trust

- d) All the above
- 33. Characteristics of disciplined behavior
 - a) Punctual
 - b) Maintain work standard
 - c) Both (a) and (b)
 - d) None of the above
- 34. Leadership skills includes
 - a) Problem-solving
 - b) Decision-making
 - c) Personal stress management
 - d) All of the above
- 35. Conflict can be resolved by
 - a) Being anguished
 - b) Being calm and listening views
 - c) Negative body language
 - d) All of the above
- 36. Methods to develop positive attitude include
 - a) Make failure a teacher
 - b) Keep Complaining
 - c) Not to forgive others
 - d) None of the above
- 37. What are the ways to build self- confidence?
 - a) Identify the problem
 - b) Don't fear mistake
 - c) Look on the bright side
 - d) All the above
- 38. What are the tips to deal with change?
 - a) Stay prepared
 - b) Understand and accept change
 - c) View change as an opportunity
 - d) All the above
- 39. Review of application for new connection, additional load/demand, etc. falls under the jurisdiction of
 - a) CERC
 - b) SERC
 - c) Both (a) and (b)
 - d) None of the above
- 40. In GIS substation the insulating medium is
 - a) Air
 - b) CO₂
 - c) Methane
 - d) SF₆

41. Stone is provided in the substation to
- a) To avoid fire accident by draining oil from transformer if leaks
 - b) To avoid growing of weeds and plants
 - c) To provide insulation
 - d) All of the above
42. A transformer works on the principle of
- a) Lenz's law
 - b) Faraday's law of electromagnetic induction
 - c) Gauss law
 - d) Biot savart law
43. In a step-up transformer
- a) Current decreases at secondary
 - b) Voltage decreases at secondary
 - c) Current increases at secondary
 - d) None of the above
44. An instrument which detects electric current is known as
- a) Voltmeter
 - b) Rheostat
 - c) Wattmeter
 - d) Galvanometer
45. In which type of transformer windings are cylindrical former wound and mounted on the core limbs
- a) Core type transformer
 - b) Shell type transformer
 - c) Both (a) and (b)
 - d) None of the above
46. Which of the following does not change in a transformer
- a) Current
 - b) Voltage
 - c) Frequency
 - d) All of the above
47. Buchholz relay is provided on transformer to
- a) Indicate minor fault inside the transformer
 - b) Indicate internal faults and isolate the transformer during major faults
 - c) Isolate the transformer during major faults
 - d) Indicate major fault inside the transformers
48. Buchholz relay is connected between
- a) Conservator and oil tank of a transformer
 - b) Pressure release valve and conservator of a transformer
 - c) Oil tank and pressure release valve of a transformer
 - d) Explosion vent pipe and oil tank of a transformer
49. Color of Silica gel in breather in dry state is

- a) White
 - b) Pink
 - c) Yellow
 - d) Blue
50. The arcing contacts of circuit breaker are made up of
- a) Copper tungsten alloy
 - b) Porcelain
 - c) Electrolytic copper
 - d) Aluminium alloy
51. A thermal protection switch can protect against
- a) Short-circuit
 - b) Temperature
 - c) Overload
 - d) Over Voltage
52. Relay can be designed to respond to change in
- a) Resistance, Reactance or Impedance
 - b) Voltage and Current
 - c) Light intensity and Temperature
 - d) All of the above
53. Arc in a circuit behaves as a
- a) Capacitive reactance
 - b) Inductive reactance
 - c) Resistance increasing with voltage rise across the arc
 - d) Resistance decreasing with voltage rise across the arc
54. Large internal faults are protected by
- a) Merz price percentage differential protection
 - b) Mho and ohm relays
 - c) Horn gap and temperature relay
 - d) Earth fault and positive sequence relay
55. HRC fuse provide best protection against
- a) Overload
 - b) Reverse current
 - c) Open-circuits
 - d) Short-circuits
56. The contact of high voltage switches used in power system is 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
57. 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
58. The fuse rating is expressed in terms of
- a) Current
 - b) Voltage
 - c) VAR
 - d) KVA
59. A short-circuit is identified by
- a) No current flow
 - b) Heavy current flow
 - c) Voltage drop
 - d) Voltage rise
60. In a single busbar 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 fault occur simultaneously
 - d) Fault occurs with respect to earthing
61. Lightning Arrester of 11/0.433 kV substation should be installed on
- a) LT side
 - b) HT side
 - c) Both HT and LT side
 - d) None of the above
62. Step potential and touch potential is associated with
- a) High voltage distribution
 - b) Earthing of the substation
 - c) Voltage rise in the substation
 - d) Communication system
63. Which sequence is followed first while closing a circuit breaker
- a) Close an isolator
 - b) Close circuit breaker
 - c) Open earth switch
 - d) Any of these
64. What is meant by creepage distance?
- a) Shortest distance between two conducting parts along a stretched string
 - b) Shortest distance between two conducting parts along the surface of the insulating material
 - c) Distance between ground and the highest earthed point on the equipment
 - d) All of the above
65. At what level is the load shedding carried out
- a) Distribution level
 - b) Transmission level

- c) Both (a) and (b)
 - d) Depending upon load
66. Which test is performed to verify that the equipment is ready for energizing?
- a) Maintenance test
 - b) Type test
 - c) Reliability test
 - d) Commissioning test
67. Which measuring instrument is used for the measurement of insulation resistance
- a) Kelvin's bridge
 - b) Wheatstone bridge
 - c) Megger
 - d) Both (b) and (c)
68. Which medium is used in air blast circuit breaker
- a) Compressed air
 - b) Vacuum
 - c) SF₆ gas
 - d) Air at atmospheric pressure
69. Which test is a special type of test performed on the transformers?
- a) Temperature rise test
 - b) Partial discharge
 - c) Ratio and polarity test
 - d) Noise level test
70. SF₆ gas is
- a) Yellow in color
 - b) Lighter than air
 - c) nontoxic
 - d) All of the above
71. Which solutions are added into the lead acid battery?
- a) Distilled water
 - b) Acid water solution
 - c) Transformer oil
 - d) Both (a) and (b)
72. Which among these gases is not used as coolant?
- a) Hydrogen
 - b) Nitrogen
 - c) Carbon dioxide
 - d) Helium
73. Which gel ensures the dryness of the incoming air in the breather?
- a) Potassium gel
 - b) Silica gel
 - c) Carbon gel
 - d) All of the above

74. Earthing conductivity is affected by
- a) Moisture content in the soil
 - b) Chemical composition
 - c) Concentration of salts in the soil
 - d) All of the above
75. Relay that responds to a combination of both voltage and current
- a) Over current relay
 - b) Distance relay
 - c) Differential relay
 - d) Directional over current relay
76. Over current relay responds to
- a) Magnitude of current above a specified value
 - b) Combination of both voltage and current
 - c) The difference between two or more device current above a set value
 - d) Only for excessive current flow in a given direction
77. Difference in voltage between the object touched and the ground point just below the person touching the object when ground currents are flowing is termed as
- a) Mesh potential
 - b) Step potential
 - c) Transferred potential
 - d) Touch potential
78. In case of breakdown of equipment of line _____ shutdown is carried out
- a) Emergency
 - b) Planned
 - c) Both (a) and (b)
 - d) None of the above
79. Isolators are used to disconnect a circuit when
- a) Line is on full load
 - b) Line is energized
 - c) Circuit breaker is not open
 - d) There is no current in the line
80. Tap changing transformers are used for
- a) Stepping up the voltage
 - b) Stepping down the voltage
 - c) Both stepping up and stepping down the voltage
 - d) Supplying low voltage current for instruments
81. Which device automatically interrupts the supply in the event of surges
- a) Earthing Switch
 - b) Series Reactor
 - c) Isolator
 - d) Circuit Breaker
82. Differential protection is the main scheme used for

- a) Transmission line protection
 - b) Transformer protection
 - c) Current transformer protection
 - d) CVT protection
83. Which of the following equipment is not installed in a substation?
- a) Shunt reactor
 - b) Exciter
 - c) Voltage transformer
 - d) Series capacitors
84. Current rating is not necessary in case of
- a) Isolators
 - b) Circuit breakers
 - c) Load break switches
 - d) Circuit breakers and load break switches
85. Which of the following correctly represents the sequence of operation of isolator, circuit breaker and earthing switch while opening a circuit
- a) Close earthing switch → open circuit breaker → open isolator
 - b) Open isolator → close circuit breaker → open earthing switch
 - c) Open circuit breaker → open isolator → close earthing switch
 - d) Close circuit breaker → close isolator → open earthing switch
86. Which of the following correctly presents the sequence of operations of isolator, circuit breaker and earthing switch while closing a circuit
- a) Ensure circuit breaker is closed → close isolator → open earthing switch
 - b) Ensure circuit breaker is open → close isolator → open earthing switch if any → close circuit breaker
 - c) Ensure circuit breaker is open → open isolator → open earthing switch if any → close circuit breaker
 - d) None of the above
87. In outdoor substation, the lightning arrester is placed nearer to the
- a) Isolator
 - b) Current Transformer
 - c) Power Transformer
 - d) Circuit Breaker
88. Load management allows utility to _____ for electricity during peak usage times, which can in turn reduce costs by eliminating the need of peaking power plants.
- a) Reduce demand
 - b) Increase demand
 - c) Both (a) and (b)
 - d) None of the above
89. Back feeding of feeders is removed after completion of
- a) Planned shutdown
 - b) Emergency shutdown

- c) Both (a) and (b)
 - d) None of the above
90. During shutdown of transformer, the circuit breaker of the Incomer is
- a) Closed first before opening the circuit breaker of transformer
 - b) Opened first after opening the circuit breaker of transformer
 - c) Closed first before closing the circuit breaker of transformer
 - d) Opened first before opening the circuit breaker of transformer
91. During charging of transformer, the circuit breaker of transformer is
- a) Closed first before closing the circuit breaker of incomer
 - b) Opened first after opening the circuit breaker of incomer
 - c) Closed first before opening the circuit breaker of incomer
 - d) Opened first before opening the circuit breaker of incomer
92. The function of capacitor bank is to give
- a) Reactive power compensation
 - b) Active power compensation
 - c) Both active and reactive power compensation
 - d) None of the above
93. The equipment whose insulation is to be tested, _____ is applied across the equipment
- a) A very low frequency test voltage
 - b) A very high frequency test voltage
 - c) A very low frequency test current
 - d) A very high frequency test current
94. The typical lightning arrestor has a
- a) Low voltage terminal and a ground terminal
 - b) High voltage terminal and a ground terminal
 - c) High voltage terminal and a low voltage terminal
 - d) All of the above
95. In transformer ratio test
- a) Single phase 230V supply is applied to HV winding and LV winding is kept open
 - b) Three phase 415V supply is applied to HV winding and LV winding is kept open
 - c) Single phase 230V supply is applied to HV winding and LV winding is kept shorted
 - d) Three phase 415V supply is applied to HV winding and LV winding is kept shorted
96. For insulation resistance test of transformer, megger leads are connected between
- a) LV and HV winding
 - b) HV winding and earth
 - c) LV winding and earth
 - d) All of the above
97. In insulation resistance test of transformer, polarization index is equal to
- a) 1 min value/ 15 sec value
 - b) 10 min value/ 1 min value
 - c) 10 min value/ 15 sec value

- d) 1 min value/ 10 min value
98. Which of the following gas is produced during Corona Discharge
- a) Ozone
 - b) Helium
 - c) oxygen
 - d) All of the above
99. In order to improve the power factor _____ device is employed in the substation
- a) Synchronous condenser
 - b) Synchronous reactor
 - c) Series capacitor
 - d) None of the above
100. Which of the device is employed in substation to limit short circuit current in the power system
- a) Shunt condenser
 - b) Reactor
 - c) Series capacitor
 - d) Shunt capacitor

Viva Questions:

1. What are the different types of substations?
2. What is the difference between switchyard and substation?
3. What is the need of transformer in a substation?
4. Explain the functions of circuit breakers.
5. Name different types of circuit breaker in a substation.
6. What is the difference between isolator and circuit breaker?
7. What is the function of LA in a substation?
8. Explain the arc quenching mechanism in oil circuit breaker?
9. What is the use of control and relay panel?
10. What is the use of battery in a substation?
11. What is the difference between CVT and PT?
12. What is a capacitor bank? Define its functions.
13. What are the different types of earthing methods used in distribution substation?
14. What are the things to be checked during maintenance of various circuit breakers?
15. What steps performed during routine operation and troubleshooting?
16. What are the methods for load management?

On Job Training Questions:

1. Conduct a maintenance activity on circuit breakers, switchgears and isolators.
2. Monitor critical parameters of the transformer.
3. Perform activities that are done in different emergency situation.
4. Perform DGA analysis on transformer oil.
5. Apply to avail PTW for emergency shutdown during breakdown or any maintenance activity.
6. Maintain a log sheet. Record all the line parameters.
7. Conduct planned shutdown to perform maintenance activity on transformer
8. Make connection for IR test and winding resistance test on a transformer.
9. Check for hotspots in electrical equipment using thermovision camera.
10. Describe the use of PPE with practical applications.