

Technician: Distribution Transformer Repair

Question Bank

Theory Questions:

1. In India, what is the rated frequency of generated electric power? (PSS/N3005)
 - a) 60 Hz
 - b) 50 Hz
 - c) 55 Hz
 - d) 53 Hz
2. Ohm's Law states that. (PSS/N3005)
 - a) $I=VR$
 - b) $V=IR$
 - c) $R=VI$
 - d) All of the above
3. The SI unit of Current is (PSS/N3005)
 - a) Ampere
 - b) Volts
 - c) Ohm
 - d) Farad
4. The electric power is generated at a thermal power plant with a typical voltage of (PSS/N3005)
 - a) 22 kV
 - b) 33 kV
 - c) 44 kV
 - d) 66 kV
5. Voltage level to the end consumer is (PSS/N3005)
 - 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 (PSS/N3005)
 - a) 66kV
 - b) 415V
 - c) 240V
 - d) 33kV or 11kV
7. Secondary distribution system supplies power to consumer at voltages of (PSS/N3005)
 - a) 220kV
 - b) 110kV
 - c) 415V or 240V
 - d) 66kV

8. Load Factor is defined as the ratio of (PSS/N3005)
 - 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. (PSS/N3005)
 - 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 (PSS/N3005)
 - 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. (PSS/N3005)
 - 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 (PSS/N3005)
 - 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 (PSS/N3005)
 - 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 (PSS/N3005)
 - a) System evaluation
 - b) Equipment selection
 - c) Operation monitoring
 - d) Troubleshooting
15. Every distribution system must carry out periodical review of (PSS/N3006)
 - a) Line losses
 - b) Revenue collections and system defects
 - c) Employee training
 - d) All of the above

16. The grid operations are monitored by (PSS/N3005)
 - 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 (PSS/N3005)
 - 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 (PSS/N2001)
 - 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 (PSS/N2001)
 - 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 (PSS/N2001)
 - 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 (PSS/N2001)
 - 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 (PSS/N2001)
 - 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. (PSS/N2001)
 - 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 (PSS/N2001)

- 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 (PSS/N2001)
- a) Solid that is not metal
 - b) Flammable liquid
 - c) Flammable gas
 - d) Metals
26. First-aid box contains (PSS/N2001)
- 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 (PSS/N2001)
- 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 (PSS/N2001)
- 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 (PSS/N2001)
- 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. (PSS/N3005)
- a) Water
 - b) Carbon dioxide gas
 - c) Transformer oil
 - d) None of the above
31. The representative of employee is nominated under regulation (PSS/N1336)
- 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 (PSS/N1336)
- a) Recognize your role

- b) Take ownership of the team goal
 - c) Earn trust
 - d) All the above
33. Characteristics of disciplined behavior (PSS/N1336)
- a) Punctual
 - b) Maintain work standard
 - c) Both (a) and (b)
 - d) None of the above
34. Leadership skills includes (PSS/N1336)
- a) Problem-solving
 - b) Decision-making
 - c) Personal stress management
 - d) All of the above
35. Conflict can be resolved by (PSS/N1336)
- a) Being anguish
 - b) Being calm and listening views
 - c) Negative body language
 - d) All of the above
36. Methods to develop positive attitude include (PSS/N1336)
- 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? (PSS/N1336)
- 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? (PSS/N1336)
- 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 (PSS/N3005)
- a) CERC
 - b) SERC
 - c) Both (a) and (b)
 - d) None of the above
40. Dry type of transformer uses _____ as the cooling medium (PSS/N3005)
- a) Oil
 - b) Air

- c) SF₆
 - d) None
41. The core of the transformer provides (PSS/N3005)
- a) Low reluctance path
 - b) High reluctance path
 - c) Both (a) and (b)
 - d) None
42. _____ provide adequate space for the expansion of oil when transformer is loaded or when ambient temperature changes (PSS/N3005)
- a) Main tank
 - b) Breather
 - c) Conservator tank
 - d) Bushing
43. The _____ of transformer accelerates the cooling rate of transformer (PSS/N3005)
- a) Radiator
 - b) Oil level indicator
 - c) Winding temperature indicator
 - d) All of the above
44. Gasket sealing, winding, insulation, moisture removal etc. of transformer are included in which services (PSS/N3005)
- a) Overhauling
 - b) Repairing
 - c) Both (a) and (b)
 - d) Neither (a) nor (b)
45. Rate of change of flux linkage is (PSS/N3005)
- a) Directly proportional to the induced EMF in a coil
 - b) Inversely proportional to the induced EMF in a coil
 - c) Multiple of the induced EMF in a coil
 - d) None of the above
46. Which of the following does not change in a transformer (PSS/N3005)
- a) Current
 - b) Voltage
 - c) Frequency
 - d) All of the above
47. Buchholz relay is provided on transformer to (PSS/N3005)
- 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 (PSS/N3005)
- 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 (PSS/N3005)
- a) White
 - b) Pink
 - c) Yellow
 - d) Blue
50. The routine inspection of transformer should be done (PSS/N3006)
- a) Weekly
 - b) Every six months
 - c) Every three years
 - d) Every ten years
51. The core of transformer is made of (PSS/N3005)
- a) Cast iron
 - b) Steel
 - c) Iron
 - d) Silicon steel
52. The eddy current losses in the core of a transformer will be less with (PSS/N3005)
- a) Laminated core without insulation between the laminations
 - b) Solid core
 - c) Laminations having insulation between them
 - d) None of the above
53. The type of transformer which is more robust mechanically is (PSS/N3005)
- a) Core type
 - b) Shell type
 - c) Both (a) and (b)
 - d) None of the above
54. The purpose of providing an iron core in a transformer is to (PSS/N3005)
- a) Provide support to windings
 - b) Reduce hysteresis loss
 - c) Decrease the reluctance of the magnetic path
 - d) Reduce eddy current loss
55. The conservator is used to (PSS/N3005)
- a) Increase the oil content
 - b) Take up expansion and contraction of oil
 - c) Absorption of moisture from air
 - d) None of the above
56. The type of oil which is suitable as transformer oil is (PSS/N3005)
- a) Animal oil
 - b) Mineral oil
 - c) Vegetable oil
 - d) Any of the above

57. The dielectric strength of transformer oil should be (PSS/N3005)
- a) 2 kV
 - b) 5 kV
 - c) 10 kV
 - d) 30 kV
58. The formation of sludge in the oil is due to (PSS/N3005)
- a) Heat
 - b) Oxidation
 - c) Both (a) and (b)
 - d) None of the above
59. The efficiency of a transformer will be maximum when (PSS/N3005)
- a) Iron losses are more than copper losses
 - b) Iron losses are equal to copper losses
 - c) Iron losses are more than copper losses
 - d) None of the above
60. The open circuit test of a transformer indicates (PSS/N3005)
- a) Iron losses
 - b) Copper losses
 - c) Both (a) and (b)
 - d) None of the above
61. Core of the transformer is laminated to reduce (PSS/N3005)
- a) Hysteresis Loss
 - b) Eddy Current loss
 - c) Iron loss
 - d) All of the above
62. Which test is performed to find out the copper loss? (PSS/N3005)
- a) Open circuit test
 - b) Short circuit test
 - c) Sumpner test
 - d) None of the above
63. The winding from which supply is taken (PSS/N3005)
- a) Secondary winding
 - b) Primary winding
 - c) Both (a) and (b)
 - d) None of the above
64. Efficiency of a transformer is given by the ratio of (PSS/N3005)
- a) Output in watts to input in watts
 - b) Input in watts to output in watts
 - c) Output in ampere to input in ampere
 - d) Input in ampere to output in ampere
65. Eddy current loss of transformer depends on (PSS/N3005)
- a) Frequency

- b) Flux density
 - c) Thickness
 - d) All of the above
66. In a transformer the energy is conveyed from primary to secondary (PSS/N3005)
- a) Through cooling coil
 - b) Through oil
 - c) By the flux
 - d) None of the above
67. The sequence of overhauling process of a transformer includes (PSS/N3006)
- a) Dismantling → Assembly → Rewinding
 - b) Rewinding → Dismantling → Assembly
 - c) Dismantling → Rewinding → Assembly
 - d) Assembly → Rewinding → Dismantling
68. Which of the following is not the part of transformer installation? (PSS/N3006)
- a) Conservator
 - b) Breather
 - c) Buchholz relay
 - d) Exciter
69. While conducting short-circuit test on a transformer the following side is short circuited (PSS/N3005)
- a) High voltage side
 - b) Low voltage side
 - c) Primary side
 - d) Secondary side
70. A transformer cannot raise or lower the voltage of a DC supply because (PSS/N3005)
- a) There is no need to change the DC voltage
 - b) A DC circuit has more losses
 - c) Faraday's law of electromagnetic induction are not valid since the rate of change of flux is zero
 - d) All of the above
71. In a transformer the tappings are generally provided on (PSS/N3005)
- a) Primary side
 - b) Secondary side
 - c) Low voltage side
 - d) High voltage side
72. Which of the following is not a routine test on transformers? (PSS/N3006)
- a) Core insulation voltage test
 - b) Impedance test
 - c) Radio interference test
 - d) Polarity test
73. The transformer laminations are insulated from each other by (PSS/N3006)
- a) Mica strip

- b) Thin coat of varnish
 - c) Paper
 - d) Any of the above
74. The method to remove the moisture from the core and windings of the transformer is (PSS/N3006)
- a) Core opening section
 - b) Boxup section
 - c) Dehydration filling section
 - d) All of the above
75. Which of the following is not routine test of transformer (PSS/N3005)
- a) Winding resistance test
 - b) Transformer ratio test
 - c) Measurement of zero sequence impedance of three-phase transformer
 - d) Dielectric test of transformer
76. For transformer winding insulation tests, to take the readings the connections are made be (PSS/N3005)
- a) HV to ground
 - b) LV to ground
 - c) HV to LV
 - d) All of the above
77. The main reason for generation of harmonics in a transformer could be (PSS/N3005)
- a) Fluctuating load
 - b) Poor insulation
 - c) Mechanical vibration
 - d) Saturation of core
78. Buchholz's relay gives warning and protection against (PSS/N3006)
- 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
79. For the parallel operation of single phase transformer it is necessary that they should have (PSS/N3005)
- a) Same efficiency
 - b) Same polarity
 - c) Same KVA rating
 - d) All of the above
80. Tap changing transformers are used for (PSS/N3005)
- 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. In a transformer for a given applied voltage, losses which remains constant irrespective of load changes are (PSS/N3005)
- a) Hysteresis and eddy current losses
 - b) Friction and windage losses
 - c) Copper losses
 - d) None of the above
82. Prior to disassembly it is recommended to clean _____ and enclosure to avoid contaminating the core and coil assemblies when they are removed (PSS/N3006)
- a) Bushings
 - b) Conservators
 - c) Transformer tank
 - d) None of the above
83. Whenever off load tap changing switch require replacement, it shall be provided on (PSS/N3006)
- a) LV winding
 - b) HV winding
 - c) Both LV and HV winding
 - d) None of the above
84. Failure of insulation between yoke and yoke clamping plates is due to (PSS/N3006)
- a) Conservator oil level below bushing rod
 - b) Lightning surges
 - c) Heavy short circuit
 - d) Poor insulation between the plates or bad workmanship during manufacturing process
85. The purpose of voltage ratio measurement of transformer is to determine (PSS/N3005)
- a) Any abnormalities in tapping in the winding
 - b) Any abnormalities in the winding
 - c) Result ensures the inductance property of the transformer
 - d) All of the above
86. Equipment used during magnetizing current test (PSS/N3005)
- a) Digital multimeter
 - b) Megger
 - c) Both (a) and (b)
 - d) None of the above
87. What is the principle of short circuit impedance test? (PSS/N3005)
- a) Excitation/Magnetizing current is the current that is required to force a given flux the core
 - b) The total voltage induced into the secondary winding of a transformer is proportional to the number of turns in the primary to the number of turns in the secondary
 - c) Rated full load current to flow through winding when secondary winding is shorted
 - d) None of the above
88. The method to examine the condition of paper insulation without touching it is known as (PSS/N3006)

- a) Dissolved Gas Analysis Test
 - b) Furan Test
 - c) Winding Resistance Test
 - d) Breakdown Voltage Test
89. Correct order while conducting Magnetizing Current Test is (PSS/N3006)
- i. Apply three phase 440V supply on HV terminal and keep LV open
 - ii. Repeat the test for LV side
 - iii. Measure current in all the three phases
 - iv. Carry out the test on maximum, normal and minimum tap position
- a) i → iii → iv → ii
 - b) iii → i → iv → ii
 - c) i → iii → ii → iv
 - d) ii → iv → iii → i
90. In transformer winding resistance test, the resistance is measured at ambient temperature and then converted to resistance at (PSS/N3005)
- a) 50°
 - b) 20°
 - c) 60°
 - d) 75°
91. During winding resistance test by simple voltmeter ammeter method, caution should be taken that (PSS/N3005)
- a) Current shall not exceed 50% of rated current
 - b) Current shall not exceed 20% of rated current
 - c) Current shall not exceed 15% of rated current
 - d) None of the above
92. For transformer ratio test (PSS/N3005)
- a) The tap changer is kept in the maximum position and LV terminals are kept open
 - b) The tap changer is kept in the lowest position and LV terminals are kept open
 - c) The tap changer is kept in the maximum position and LV terminals are kept closed
 - d) The tap changer is kept in the lowest position and LV terminals are kept closed
93. For a nominal system voltage rating of 11 kV, the highest system voltage rating for equipment will be (PSS/N3005)
- a) 3 kV
 - b) 28 kV
 - c) 15 kV
 - d) 12 kV
94. Which of the following statements is/are correct statements? (PSS/N3006)
- a) EMF per turn in HV winding is more than EMF per turn in LV winding
 - b) EMF per turn in HV winding is less than EMF per turn in LV winding
 - c) EMF per turn in both the winding are equal
 - d) All of the above
95. In a transformer zero voltage regulation is achieved at a load power factor which is (PSS/N3005)

- a) Zero
 - b) Unity
 - c) Lagging
 - d) Leading
96. In a transformer (PSS/N3005)
- a) Both OC and SC tests are conducted to LV side
 - b) OC test is conducted on LV side and SC test is conducted on HV side
 - c) OC test is conducted on HV side and SC test is conducted on LV side
 - d) Both OC and SC tests are conducted to LV side
97. Increasing the number of turns of wire on the secondary of a transformer will (PSS/N3006)
- a) Decrease the secondary current
 - b) Increase the secondary current
 - c) Have no effect on the secondary current
 - d) Increase the primary current
98. Which is the arrangement of windings in a core type single phase transformer? (PSS/N3006)
- a) Half LV inside and half HV outside on each core limb
 - b) LV on one core limb and HV on the other
 - c) Sandwiched LV and HV discs on each core limb
 - d) Half HV inside and half LV outside on each core limb
99. Two transformers operating in parallel will share the load depending on their (PSS/N3006)
- a) Rating
 - b) Leakage reactance
 - c) Efficiency
 - d) Per unit impedance
100. In a three phase star – delta transformer, what is the angle between primary and secondary phase voltage (PSS/N3006)
- a) Delta side lags by -30°
 - b) Star side lags by -30°
 - c) Star side leads by 30°
 - d) Delta side leads by 30°

Viva Questions:

1. What is a transformer? (PSS/N3005)
2. Can transformer be operated at voltage other than name plate voltage? (PSS/N3005)
3. Can single phase transformers be used for three phase applications? (PSS/N3005)
4. Name different parts and accessories of distribution transformer. (PSS/N3005)
5. What are the parameters mentioned on the name plate rating of transformers? (PSS/N3005)
6. If part of a primary winding of a transformer were accidentally short-circuited, what would be the immediate effect? (PSS/N3006)
7. At what power maximum efficiency of distribution transformer is designed? (PSS/N3006)
8. What happens when transformer is given DC supply? (PSS/N3005)
9. What are the conditions for parallel operation of transformers? (PSS/N3005)

10. Which chemical is used in the breather of the transformer? (PSS/N3006)
11. In practice, what determines the thickness of the laminate or stamping? (PSS/N3005)
12. What is the process involved in transformer manufacturing? (PSS/N3005)
13. What are the parameters to be checked during testing and inspection of transformer? (PSS/N3005)
14. What are the different types of faults in a transformer? (PSS/N3005)
15. What is Buchholz relay and the significance of it into the transformer? (PSS/N3005)

On Job Training Questions:

1. Conduct a maintenance activity on distribution transformer. (PSS/N3006)
2. Monitor critical parameters of the transformer. (PSS/N3005)
3. Assemble LV and HV winding on the limbs on the core. (PSS/N3005)
4. Describe the use of PPE with practical applications. (PSS/N2001)
5. Make a record of transformer condition before and after overhauling.
6. Perform DGA analysis on transformer oil. (PSS/N3005)
7. Perform winding insulation test, make connection and record the test value. (PSS/N3005)
8. Perform SC and OC test on transformer. (PSS/N3005)
9. Make a checklist to be performed at a minimum to ensure that the transformer is ready to be energized. (PSS/N3006)
10. Make connection for IR test and magnetizing current test on a transformer. (PSS/N3005)