

Engineer Transmission 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. How many Regional Grids existed before integration as One Grid One Nation?
 - a) Two
 - b) Three
 - c) Four
 - d) Five
7. POWERGRID is a
 - a) State Transmission Utility
 - b) Private Transmission Utility
 - c) Central Transmission utility
 - d) None of the above
8. By which of the following systems electric power may be transmitted?

- a) Overhead System
 - b) Underground System
 - c) Both (a) and (b)
 - d) None of the above
9. Most of the high voltage transmission line in India are
- a) Underground
 - b) Overhead
 - c) Either of the above
 - d) None of the above
10. High voltage transmission lines use
- a) Suspension insulators
 - b) Pin insulators
 - c) Shackle insulators
 - d) All of the above
11. What is the purpose of The Electricity Act 2003?
- a) Handling complaints about meter
 - b) Create liberal framework for power development
 - c) Regulate the tariff of generating companies
 - d) Specify and enforce the standards with respect to quality, continuity, reliability of services by the licensees
12. Every transmission company must carry out periodical review of
- a) Line Losses
 - b) Overloaded transformers, overloaded High Tension (HT) lines, overloaded substations
 - c) Maintaining quality and reliable power supply to the distribution utility
 - d) All of the above
13. A lightning arrester is usually located nearer to
- a) Transformer
 - b) Isolator
 - c) Bus-bar
 - d) Circuit breaker
14. High voltage for transmitting power is economically available from
- a) DC currents
 - b) AC currents
 - c) Carrier currents
 - d) None of the above
15. Transmission lines link
- a) Generating station to receiving end station
 - b) Receiving end station to distribution transformer
 - c) Distribution transformer to consumer premises
 - d) Service points to consumer premises
16. As per Faraday's law of electromagnetic induction, an emf is induced in a conductor whenever it

- a) Lies perpendicular to the magnetic flux
 - b) Moves parallel to the direction of the magnetic field
 - c) Lies in a magnetic field
 - d) Cuts magnetic flux
17. Tower footing resistance shall not exceed
- a) 5 ohm
 - b) 2 ohm
 - c) 10 ohm
 - d) 0.5 ohm
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 & 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 anguish
 - 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. An inductors electrical resistance when used in an AC circuit is called
- a) Capacitive Reactance
 - b) Inductive Reactance
 - c) Impedance
 - d) All of the above
40. In GIS substation the insulating medium is
- a) Air
 - b) CO₂
 - c) Methane
 - d) SF₆
41. For measuring hot spot in conductor/ insulator/ isolator etc. the equipment required is
- a) Megger

- b) Earth resistance instrument
 - c) CT/PT analyzer
 - d) Thermovision camera
42. One commercial unit of energy equals
- a) 500 watt-sec
 - b) One watt-hour
 - c) One kilowatt-hour
 - d) Ten kilowatt-hour
43. An instrument which detects electric current is known as
- a) Voltmeter
 - b) Rheostat
 - c) Wattmeter
 - d) Galvanometer
44. Earthing is necessary to give protection against
- a) Danger of electric shock
 - b) Voltage fluctuation
 - c) Overloading
 - d) High temperature of the conductors
45. Which of the following does not change in a transformer
- a) Current
 - b) Voltage
 - c) Frequency
 - d) All of the above
46. Instrument Transformer can be categorized as
- a) Current transformer
 - b) Potential transformer
 - c) Both (a) and (b)
 - d) Distribution Transformer
47. The secondary of current transformer should be
- a) Shorted
 - b) Opened
 - c) Partially shorted
 - d) Either (b) or (c)
48. Color of Silica gel in breather in dry state is
- a) White
 - b) Pink
 - c) Yellow
 - d) Blue
49. 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
50. Break down voltage (BDV) value is tested for
- a) Transformer winding
 - b) Transformer oil
 - c) Transformer core
 - d) Transformer bushing
51. Maintenance of transmission line in live condition is called
- a) Cold line maintenance
 - b) Preventive maintenance
 - c) Hot line maintenance
 - d) None of the above
52. When silica gel comes in contact with moisture its color changes to
- a) Blue
 - b) Black
 - c) Violet
 - d) Pink
53. Routine test on CT includes
- a) Polarity test
 - b) IR test
 - c) Magnetization current test
 - d) All of the above
54. Unit of Reactive Power, Active Power and Apparent Power respectively are
- a) W, VAR and VA
 - b) VA, VAR and W
 - c) W, VA and VAR
 - d) VAR, W and VA
55. The Act that was amended with a view to make transmission as a separate activity for inviting greater participation in investment from public and private sector was
- a) The Indian Electricity Act, 1910
 - b) The Electricity Laws (Amendment) Act, 1998
 - c) The Electricity Regulatory Commission Act, 1998
 - d) The Electricity Act, 2003
56. The corona is considerably affected by which of the following?
- a) Size of the conductor
 - b) Shape of the conductor
 - c) Surface condition of the conductor
 - d) All of the above
57. % regulation of a transmission line where V_S is sending end voltage and V_R is receiving end voltage is mathematically given by
- a) $((V_R - V_S)/V_R^2) * 100$
 - b) $((V_S - V_R)/V_R) * 100$
 - c) $((V_S - V_R)/V_S) * 100$

- d) $((V_S - V_R)/V_R^2) * 100$
58. In insulation resistance test of transformer, absorption coefficient is equal to
- 1 min value/ 15 sec value
 - 10 min value/ 1 min value
 - 10 min value/ 15 sec value
 - 1 min value/ 10 min value
59. The power transmitted will be maximum when
- Corona losses are minimum
 - Reactance is high
 - Sending end voltage is more
 - Receiving end voltage is more
60. Which of the following bus-bar schemes has the lowest cost
- Ring bus-bar scheme
 - Single bus-bar scheme
 - Breaker and a half scheme
 - Main and transfer scheme
61. Which of the following is the main advantage of AC transmission system over DC transmission system
- Less instability problem
 - Less insulation problems
 - Easy transformation
 - Less losses in transmission over long distances
62. The top most conductor in high transmission line is
- Earth conductor
 - R-phase conductor
 - Y-phase conductor
 - B-phase conductor
63. If the height of the transmission tower is increased
- The line capacitance will decrease but line inductance will remain unchanged
 - The line capacitance and inductance will not change
 - The line capacitance will increase but line inductance will decrease
 - The line capacitance will decrease but line inductance will increase
64. Transformer oil drums should be stored so that the air release hole is on the upper side and at an angle of
- 30°
 - 90°
 - 45°
 - 60°
65. Sulphur hexafluoride gas has the property of
- Superior arc quenching property
 - Low cooling property
 - Toxic property

- d) Both (a) and (b)
66. If the height of the transmission tower is increased, which of the following parameters is likely to change
- a) Capacitance
 - b) Inductance
 - c) Resistance
 - d) All of the above
67. Tariff regulation comes under section
- a) Section 57
 - b) Section 61
 - c) Section 135
 - d) Section 153
68. High voltage is primarily used, for long distance power transmission, to
- a) To reduce the time of transmission
 - b) Reduce the transmission losses
 - c) Make the system reliable
 - d) None of the above
69. SF₆ gas is
- a) Yellow in color
 - b) Lighter than air
 - c) nontoxic
 - d) All of the above
70. Which of the following medium is employed for extinction of arc in air circuit breaker
- a) Water
 - b) Oil
 - c) Air
 - d) SF₆
71. Air blast circuit breaker is used for
- a) Over currents
 - b) Short duty
 - c) Intermittent duty
 - d) Repeated duty
72. What is the highest system voltage for a 400 kV transmission system
- a) 420 kV
 - b) 410 kV
 - c) 430 kV
 - d) 400 kV
73. Load flow control in meshed system, fast voltage regulation and increased power transfer over long AC lines are features of
- a) HVAC System
 - b) HVDC System
 - c) FACTS

- d) Both (a) and (b)
74. To prevent unacceptable high voltage fluctuations or the power failures that can result in transmission system
- Active power must be compensated
 - Reactive power must be compensated
 - High voltage fluctuations cannot be controlled
 - None of the above
75. If current in a conductor increases then according to lenz's law self-induced voltage will
- Aid the increasing current
 - Tend to decrease the amount of current
 - Produces current opposite to the increasing current
 - Aid the applied voltage
76. The substations which handle large quantities of power and where the orientation of outgoing feeders is in opposite directions uses
- One and a half breaker arrangement
 - Double main and transfer bus bar arrangement
 - Single bus bar arrangement
 - Double bus bar arrangement
77. Which of the following is not the consequence of fault?
- Abnormally large currents will flow in parts of system with associated overheating of components.
 - System voltages will be beyond their normal acceptable levels, resulting in possible equipment damage.
 - Parts of the system will be caused to operate as unbalanced three phase systems, which will mean improper operation of the equipment.
 - None of the above
78. The fault due to winding flashover caused by line surges is
- Phase to phase fault
 - Core fault
 - Earth fault
 - Inter-turn fault
79. Induction dice overcurrent relay operates according to the torque equation, where K is a constant ϕ_1 and ϕ_2 are the two fluxes and Θ is the phase angle between the fluxes, is given by
- $T=K \times \phi_1 \times \phi_2 \cos\Theta$
 - $T=K \times \phi_1 \times \phi_2 \sin\Theta$
 - $T=K \times \phi_1 \times \phi_2 \tan\Theta$
 - None of the above
80. The fault due to insulation breakdown that can permit sufficient eddy-current to flow to cause overheating, which may reach a magnitude sufficient to damage the winding is
- Core fault
 - Phase to phase fault
 - Earth fault
 - Inter-turn fault

81. Differential protection is the main scheme used for
- Transmission line protection
 - Transformer protection
 - Current transformer protection
 - CVT protection
82. Buchholz protection provides an alarm for
- Inter-turn fault
 - Core bolt insulation failure
 - Winding fault
 - All of the above
83. The device that can transfer collected data to other devices and receive data and control commands from other device
- Remote Terminal Unit (RTU)
 - Digital fault recorder
 - Protective relay
 - Meter
84. Which of the following is not a part of transformer installation?
- Conservator
 - Breather
 - Buchholz relay
 - Exciter
85. A capacitive voltage transformer is a transformer used in power system to
- Step down extra high voltage signals and provide high voltage signals either for measurement or to operate a protective relay
 - Step up extra high voltage signals and provide low voltage signals either for measurement or to operate a protective relay
 - Step down extra high voltage signals and provide low voltage signals either for measurement or to operate a protective relay
 - Step up extra high voltage signals and provide high voltage signals either for measurement or to operate a protective relay
86. The differential relay is a current operated relay that responds to
- the difference between two or more device currents above a set value
 - a combination of both voltage and current
 - a magnitude of current above a specified value
 - excessive current flow in a given direction
87. What is the rated short circuit current (1 sec) for 220kV
- 20kA
 - 30kA
 - 40kA
 - 50kA
88. When a no load transmission line is suddenly switched ON, voltage on the line becomes
- Thrice the normal system voltage

- b) Twice the normal system voltage
 - c) Remains same as of normal system voltage
 - d) Half the normal system voltage
89. 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
90. 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
91. If furualdehyde content in ppm of transformer is <0.1 it signifies that
- a) Transformer is healthy
 - b) There is moderate deteriorotation in transformer
 - c) Transformer is extensively deteriorotated
 - d) Transformer life is ended
92. 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
93. 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
94. 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
95. 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
96. 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
97. In a circuit a 33 ohm resistor carries a current of 2A. The voltage across the resistor is
- a) 33V
 - b) 66V
 - c) 80V
 - d) 132V
98. A light bulb draws 300mA when the voltage across it is 240V. The resistance of the light bulb is
- a) 400Ω
 - b) 600Ω
 - c) 800Ω
 - d) 1000Ω
99. In case of transmission line conductors with the increase in atmospheric temperature
- a) Length decreases but stress increases
 - b) Length increases but stress decreases
 - c) Both the length and stress increases
 - d) Both the length and stress decreases
100. Large internal faults are protected by
- a) Merz price protection
 - b) Mho and ohm relays
 - c) Horn gaps and temperature relays
 - d) Earth fault and positive sequence relays

Viva Questions:

1. Why electrical power is transmitted at high voltage level in a transmission system?
2. What are the advantages of HVAC transmission system over HVDC transmission system?
3. How reactive power can be compensated in power transmission system?
4. What is the highest system voltage for 220kV system?
5. What are the parameters considered for design of transmission grid substation?
6. What are the points to be considered during design of transmission tower?
7. What are the applications of Substation Automation System (SAS)?
8. Explain the arc quenching mechanism in oil circuit breaker?
9. In SF₆ gas circuit breaker, the contacts remain surrounded by sulphur hexafluoride gas (SF₆) at a pressure of about?
10. What are the methods of transmission line protection?
11. A transformer works on the principle of?
12. Name some accessories of transformer.

13. What is the function of lightning arrester?
14. What are the routine tests on transformer?
15. Name the instrument used for measurement of insulation resistance.

On Job Training Questions:

1. Conduct detailed survey and field investigation to design, construct, operate and run the transmission line.
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. Make connections for primary injection test on CT and measure secondary currents at all core of CT circuits.
6. Show the connection of megger on equipment. Record the readings.
7. Perform routine tests on circuit breaker
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.