6GTD

2 marks

1. What is the function of surge tank?
2. What are the advantages of high transmission voltage ?
3. Draw the layout of a typical a.c. power supply scheme by single line diagram.
4. Explain critical disruptive voltage.
5. What is sag in overhead lines?
6. What are the factors which affect corona ?
7. What is voltage regulation?
8. Define Transmission efficiency.
9. Define load factor.
10. What do you understand by tariff?
11. What is ring main distribution system?
12. What is Corona ?
13. Define flat rate tariff.
14. What is the function of air-preheater in thermal power plant?
15. State the classification of overhead transmission line on its voltage and distance.
16. What do you mean by Ferranti effect?
17. What is voltage regulation of a transmission line?
18. Define Transmission efficiency.
19. What is Demand Factor?
20. What is load curve?
21. Define plant capacity factor.
22. What is voltage regulation?
23. What do you understand by tariff?
24. What is grading of cables?
25. What is the function of an economiser in a thermal power station?
26. Why 3-4, 4-wire system is used for distribution system and not 3-4, 3-wire system?
27. Why metallic sheath is provided in underground cables?

28. Define diversity factor.
29. Define maximum demand .
30. What are the various types of line supports?
31. What is moderator?where it is used?
32. What is the objective of armouring of cable?
33. State the type and no of insulators required for a 220kv transmission line?
34. What is bus coupler ?
35. Define peak load on power statio0n ?
36. Classify overhead transmission line on its voltage and distance ?
37. Why power transmission is done in high voltage ?.
38. State TWO causes of lo0w power factor ?
39. Draw the layout of a typical AC power supply scheme by single line diagram ?
40. What is grading of cables ?
41. What is tariff ?
42. What is voltage regulation ?
43. What is load factor ?
44. State the difference transmission voltages adopted in india ?
45. What is ACSRconductor and where it is used ?.
46. Where shackle insulators are used ?
47. What are the various types of power factor improvement devices ?
48. What type of power plant is free form air pollution ?
49. What are the components of a distribution line ?
50. Define plant capacity factor ?

5 MARK.

1. Draw the schematic diagram of nuclear power plant and discuss its operation ?
2. Draw the schematic diagram of hydro power plant and discuss its operation ?
3. Draw the schematic diagram of thermal power plant and discuss its operation ?

4. State and prove kelvins law for economical size of conductor for transmission line ?
5. Describe two part tariff with it's advantages and disadvantages ?
6. Describe briefly the different types of DC distributor ?
7. Discuss the various types of insulator ?
8. What are causes of low power factor and how it can be improved ?
9. What are the factors affecting corona and how it can be reduced ?
10. Draw an LT substation layout and name it's important component ?
11. Derive SAG for an overhead transmission line when supports are at an unequal level ?
12. Derive SAG for an overhead transmission line when supports are at an equal level ?
13. State the advantages of HVDC transmission over HVAC transmission ?
14. Write inn brief about suspension type insulator ?.
15. Write short notes on ring main distribution system ?
16. Write short note on load curves ?
17. Explain performance of a single phase short transmission line , voltage regulation and efficiency with vector diagram ?
18. Explain performance of a single phase medium transmission line capacitor lumped at load end , voltage regulation and efficiency with vector diagram ?
19. Explain performance of a single phase medium transmission line pi method , voltage regulation and efficiency with vector diagram ?
20. Explain the difference types of distribution scheme ?

<u>10 mark</u>

1. A transmission line has a span of 200 metres between level supports. The conductor has a cross-sectional area of 1.29 cm2 , weighs 1,170 kg/km and has a breaking stress of 4,218 kg/cm2 . Calculate the sag for a factor of safety of 5 allowing a wind pressure of 122 kg per m2 of projected area. What is the vertical sag?
2. A transmission line has a span of 150 metres between supports, the supports being at the same level. The conductor has a cross-sectional area of 2 cm2 . The ultimate strength is 5,000 kg/cm2 . The specific gravity of the material is 8.9. If the wind pressure is 1.5 kg/m length of the conductor, calculate the sag at the centre of the conductor if factor of safety is 5?
3. A transmission line has a span of 214 metres. The line conductor has a crosssection of 3.225 cm2 and has an ultimate breaking strengh of 2,540 kg/cm2 . Assuming that the line is covered with ice and provides a

combined copper and ice load of 1.125 kg/m while the wind pressure is 1.5 kg/m run (i) calculate the maximum sag produced. Take a factor of safety of 3 (ii) also determine the vertical sag?

4. Two towers of height 30 and 90 m respectively support a transmission line conductor at water crossing. The horizontal distance between the towers is 500 m. If the tension in the conductor is 1,600 kg, find the minimum clearance of the conductor and the clearance of the conductor mid-way between the supports. Weight of the conductor is 1.5 kg/m. Bases of the towers can be considered to be at the water level.
5. A 2-wire d.c. distributor cable AB is 2 km long and supplies loads of 100A, 150A,200A and 50A situated 500 m, 1000 m, 1600 m and 2000 m from the feeding point A. Each conductor has a resistance of 0·01 Ω per 1000 m. Calculate the p.d. at each load point if a p.d. of 300 V is maintained at point A?
6. A single-phase a.c. distributor 500 m long has a total impedance of (0.02 + j 0.04) Ω and is fed from one end at 250V. It is loaded as under :
   (i) 50 A at unity power factor 200 m from feeding point.
   (ii) 100 A at 0.8 p.f. lagging 300 m from feeding point.

   (iii) 50 A at 0.6 p.f. lagging at the far end.

   Calculate the total voltage drop and voltage at the far end. Read more on Sarthaks.com - https://www.sarthaks.com/487703/single-phase-distributor-500-long-has-total-impedance-and-fed-from-one-end-250v-loaded-under

7. A (medium) single phase transmission line 100 km long has the following constants :
Resistance/km/phase = 0·15Ω
Inductive reactance/km/phase = 0·377 Ω
Capacitive reactance/km/phase = 31·87 Ω
Receiving end line voltage = 132 kV
Assuming that the total capacitance of the line is localised at the receiving end alone, determine :
(i) sending end current (ii) line value of sending end voltage
(iii) regulation (iv) sending end power factor
The line is delivering 72 MW at 0·8 p.f. lagging.

8. A three-phase transmission line is 160 km long and supplies a load of 12 MW at 0.85 power factor lagging at 80 kV, 50 Hz. Each conductor has a resistance of 0.275 Ω / km, an inductive reactance of 0.5625 Ω / km and a capacitance to neutral of 0.008625 µF / km. Calculate the line-to-line sending end voltage and the sending end current, using:

i. The nominal T method.
ii. The nominal Π method.

If the sending end voltage remains constant, estimate the approximate rise in voltage at the receiving end when the load is switched off. Hence calculate the per unit voltage regulation of the transmission line?

9. A short 3 phase transmission line, connected to a 33kV, 50 Hz generating station at the sending end is required to supply a load of 10Megawatts at 0.8 power factor lagging, 30kV at

the receiving end. If the minimum transmission line efficiency is to be limited to 96%, estimate the per phase values of resistance and inductance of the line.

10. *A 3-phase, 50-Hz overhead transmission line 100 km long has the following constants:*
Resistance/km/phase = 0.1 Ω
Inductive reactance/km/phase = 0·2 Ω
Capacitive susceptance/km/phase = 0·04 × 10− 4 Siemen
Determine (i) the sending end current (ii) sending end voltage (iii) sending end power factor and (iv) transmission efficiency when supplying a balanced load of 10,000 kW at 66 kV, p.f. 0·8lagging. Use nominal T method.