



II B.Tech II Sem Regular End Examination, August 2021

POWER SYSTEMS-I**(EEE)****Time: 3 Hours.****Max. Marks: 70**

Note: 1. Answer any FIVE questions.

2. Each question carries 14 marks and may have a, b as sub questions.

- | | | | | | |
|---|----|---|----|-----|-----|
| 1 | a) | Explain the schematic arrangement of hydro power plant.
Explain each part of it. | 7M | C01 | BL4 |
| | b) | Explain different non conventional energy sources. | 7M | C01 | BL4 |
| 2 | a) | State the factors for the choice of a site for a nuclear power plant. | 7M | C01 | BL1 |
| | b) | Explain the generation of solar energy. | 7M | C01 | BL4 |
| 3 | a) | What is tariff? State different desirable characteristics of a Tariff. | 7M | C02 | BL1 |
| | b) | What is load curve? Explain its significance. | 7M | C02 | BL4 |
| 4 | a) | Calculate the annual bill of a consumer whose maximum demand is 125kW, p.f is 0.85 lagging and load factor is 55%. The tariff used is Rs 200 per KVA of maximum demand plus Rs 3per KWH consumed. | 7M | C02 | BL3 |
| | b) | State different types of Insulating materials used for Insulators. | 7M | C03 | BL1 |
| 5 | a) | A string of 4 insulator units has a self-capacitance equal to 9 times the pin-to-earth capacitance. Find (i) the voltage distribution across various units as a percentage of total voltage across the string
(ii) the string efficiency. | 7M | C03 | BL3 |
| | b) | What is cable? Explain different types of cables. | 7M | C03 | BL4 |
| 6 | a) | What is the purpose of an over head transmission line? How are these lines classified? | 7M | C04 | BL2 |
| | b) | What is corona? Explain the factors affecting corona loss. | 7M | C04 | BL4 |
| 7 | a) | A short 3-phase transmission line has a series line impedance per phase of $(20 + j50) \Omega$. The line delivers a load of 50 MW at 0.7 p.f. lag. Determine the regulation of the line. System voltage is 220 KV. | 7M | C04 | BL3 |
| | b) | How does a.c. distribution differ from d.c. distribution? | 7M | C05 | BL2 |
| 8 | a) | What are the controlling factors in determining the size of distributor? Discuss. | 7M | C05 | BL2 |
| | b) | A 2-wire d.c distributor ABCDEA in the form of a ring main is fed at a point A at 220 V and is loaded as follows: 10 A at B; 20A at C; 30A at D and 10A at E . The resistance of various sections (go and return) are AB=0.1 Ω ; BC= 0.05 Ω ; CD= 0.01 Ω ; DE= 0.025 Ω and EA= 0.075 Ω . Find: (i) the point of minimum potential and (ii) current in each section of distributor. | 7M | C05 | BL3 |