Code No:124AD

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, August/September - 2022
POWER SYSTEMS-I
(Electrical and Electronics Engineering)

Time: 3 Hours   **Max.Marks:75**

Answer any five questions
All questions carry equal marks
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1.a) What are the factors to be considered for selection of the site for a thermal powerstation?
 b) Explain the functions of Boilers, Economizers and Super heaters with neat diagrams.
                                                                    [6+9]

2.a) Briefly explain relative merits of different types of nuclear reactors used in nuclear power plant.
 b) A 75 MW steam station uses coal of calorific value 6400 kcal/Kg. Thermal efficiency of the station is 30 % and electrical efficiency is 92 %. Calculate the coal consumption per hour when the station is delivering its full rated output.   [7+8]

3.a) Explain the radial distribution system with neat diagram and list out its merits and demerits.
 b) An 800m distributor fed from both ends A and B is loaded uniformly at the rate of 1.2A/m run, the resistance of each conductor being 0.05 ohm per/km. Determine the minimum voltage and the point where it occurs if feeding points A and B are maintained at 255 V and 250 V respectively. Find also the current supplied from feeding point A and B.
                                                                    [7+8]

4.a) Distinguish between primary and secondary distribution systems with suitable examples.
 b) Write short notes on various types of DC distribution systems.   [8+7]

5.a) Explain about comparison of air insulated substations and gas insulated substations.
 b) Describe the Doubly bus bar scheme with neat diagram.   [8+7]

6.a) Classify various types of substations according to service requirements and explain.
 b) Draw the layout of a typical 11KV/400V Indoor substation and explain the equipments in detail.   [6+9]

7.a) What are the methods of voltage control and explain about shunt capacitor briefly?
 b) Explain the method of power factor improvement using phase advancer and discuss the advantages and disadvantages of this method.   [8+7]

8.a) Define the factors which affect the cost of generation and explain their division into fixed, semi fixed and running costs.
 b) An industrial consumer having a maximum demand of 100 kW, maintain a load factor of 60%. The tariff rates are Rs. 900 per kVA of maximum demand per annum plus Rs. 1.8 per kWh of energy consumed. If the average p.f is 0.8 lagging, calculate the total energy consumed per annum and the annual electricity bill.   [8+7]

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