Code No: 154BW

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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech II Year II Semester Examinations, August/September - 2021

POWER SYSTEM - I

(Electrical and Electronics Engineering)

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

Answer any five questions
All questions carry equal marks

1.a) Draw the schematic of gas turbine power plant and explain.
b) Explain in detail about energy conservation and storage. [8+7]

2.a) Give the advantages and disadvantages of hydroelectric plants.
b) Discuss in detail about the components of tidal power plant. [7+8]

3.a) A generating station has a maximum demand of 30 MW and has connected load of 60 MW. The annual generation of units is 30×10^7 kWh. Calculate the load factor and the demand factor.
b) Discuss in detail about the difference between load curve and load duration curve. [8+7]

4.a) An industry daily load is 200 kW for first 2 hr, 90 kW for next 8 hr, 140 kW for next 6 hr, and 6 kW for the remaining time. Calculate the electricity expenditure per year, if the tariff in force is Rs. 1,100/kW of maximum demand per annum plus Rs. 1.0/kWh.
b) Explain the significance of load factor and diversity factor. [8+7]

5.a) Explain different types of Insulators.
b) A string of eight suspension insulators is to be fitted with a grading ring. If the pin to earth capacitances are all equal to C, find the values of line to pin capacitances that would give a uniform voltage distribution over the string. [8+7]

6.a) Discuss about various types of cables.
b) Determine the maximum working voltage of a single core lead sheathed cable having a conductor 1 cm dia and sheath of 5 cm dia inside. Two insulating materials with permittivities and maximum stresses 4, 2.5 and 60 kV/cm and 50 kV/cm respectively are used. [8+7]

7.a) Explain the methods of reducing corona loss.
b) Derive the expression for the capacitance of three phase lines with symmetrical spacing. [7+8]

8.a) Give the detailed comparison between AC and DC distributions.
b) Discuss in detail about the selection of site for substation. [8+7]

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