Code No: 134BX

R16

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech II Year II Semester Examinations, July/August - 2021
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. What are the types of fuels used in thermal power plants? Explain the operation of thermal pair plant with line diagram. [15]

2. Explain the functions of different components of a Gas turbine power plant with a neat block diagram. [15]

3.a) Explain the working of pumped storage plants.
b) Calculate the average power in kW that can be generated in a hydro-electric project from the following data:
Catchment area = 5×109 m^2; Mean head, H = 40 m
Annual rainfall, F = 1.35 m; Yield factor, K = 80 %
Overall efficiency = 75%.
If the load factor is 50%, what is the rating of generators installed? [8+7]

4. Explain with neat sketch governing mechanism of Francis Turbine. [15]

5. A DC ring main ABCDA is fed from point A with 230 V supply and the loop resistances of various sections are AB = 0.04 ohms; BC = 0.35 ohms; CD = 0.5 ohms and DA = 0.05 ohms. The main supplies 100 A at B, 150A at C and 200 A at D. Evaluate the voltages at each load point. If the points A and C are inter connected through a link of 0.05 ohm. [15]

6. Explain about the different types of distribution systems. [15]

7. Explain about the 33/11 kV substation showing the location of all the substation equipments. [15]

8.a) Explain in detail the different types of tariffs.
b) An industry has a maximum demand of 100kW .Two alternate tariffs are as follows:
i)A fixed charge of Rs60/kW/annum + a running charge of 10 paise /unit
ii) A charge of 12 paise/unit If the factory runs for 3000 hours with a load factor of 80%, estimate which tariff is economical and by how much? [8+7]

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