Code No: 134BX

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B.Tech II Year II Semester Examinations, December - 2019

POWER SYSTEMS – I

(Electrical and Electronics Engineering)

Time: 3 Hours

Max. Marks: 75

Note: This question paper contains two parts A and B. Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART - A

		(23 IVIALKS)
1.a)	What is the purpose of Super heater?	[2]
b)	Write the types of Nuclear Reactors and one advantage of each type.	[3]
c)	What is mass curve in Hydroelectric power station?	[2]
d)	What is draft tube?	[3]
e)	What are the design features of DC distribution system?	[2]
f)	Compare overhead and underground distribution systems.	[3]
g)	What are the substation equipments showing in the substation layout?	[2]
h)	Write Advantages of Gas insulated substation.	[3]
i)	Define plant use factor.	[2]
j)	What is the difference between load duration and integration load duration curves?[3]	

PART - B

(50 Marks)

2. Draw the line diagram of Thermal power station showing all components. Explain in detail. [10]

OR

- What are safety precautions that are taken from radiation during chain reaction? 3.a) Explain BWR with neat diagram. b) [5+5]
- 4. Classify turbines that are used in Hydro electric power plants. Explain in detail. [10] OR
- 5. Explain the concept of pumped storage plant and storage requirements. [10]
- Make a comparison between DC and AC distribution system. 6.a)
- A two wire DC distributor cable AB is 2 km long and supplies loads of 100 A, 150 A, b) 200 A, and 50 A situated 500 m, 1000 m, 1600 m and 2000m from the feeding point A. Each conductor has a resistance of 0.01 ohms per 1000 m. Calculate the voltage at each load point if a voltage of 300 V is maintained at point A. [5+5]

OR

- 7.a) Classify the distribution systems.
- b) A single phase distributor one kilometre long has resistance and reactance per conductor of 0.1 Ω and 0.15 Ω respectively. At the far end, the voltage V_B = 200 V and the current is 100 A at a p.f. of 0.8 lagging. At the mid-point M of the distributor, a current of 100 A is tapped at a p.f. of 0.6 lagging with respective to the voltage at the mid-point. Calculate: i) Voltage at mid-point
 - ii) Sending end voltage V_A
 - iii) Phase an Merrer Wander esults.co.in [5+5]

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8. Sketch neatly the various bus bar arrangements that are used in Air Insulated Substation.

[10]

OR

- 9. Classify the different types of Gas Insulated Substations and draw the single line diagram of GIS. [10]
- 10.a) Describe the desirable characteristics of tariff.
 - b) An industrial consumer has a maximum demand of 120 kW and maintains a load of 80%. The tariff in force is Rs. 60 per kVA of maximum demand plus 8 paise per unit. If the average p.f. is 0.8 lagging, calculate the total energy consumed per annum and the annual bill.

OR

- 11.a) Define and explain the following factors:i) demand factor ii) diversity factor iii) capacity factor and iv) utilization factor.
 - b) The tariff in force is Rs. 150 per kVA of maximum demand and 8 paise per unit consumed. If the load factor is 30%, find the overall cost per unit at i) unity p.f. and ii) 0.7 p.f.

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