B.E. Electrical (Electronics & Power) Engineering Sem-III (CBS + C.B.C.S. Pattern)

EP 305 / 3BEEE05 - Power Generation Systems

P. Pages : 2 **GUG/S/19/11490**

Time : Three Hours * 1 1 5 6 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Due credit will be given to neatness and adequate dimensions.
3. Assume suitable data wherever necessary.
4. Use of slide rule, Logarithmic tables is permitted.
5. Non programmable calculator is permitted.

1. a) Define the following Terms: **8**
i) Load Factor ii) Connected Load
iii) Maximum Demand iv) Utilization Factor

b) What are the different sources of conventional and Non-conventional energy? Explain in brief. **8**

OR

2. a) Draw and Explain Load curve and Load duration curve. **8**

b) The peak load on a power station is 40MW. The loads having maximum demands of 20MW, 15MW & 10MW are connected to the power station. The capacity of the power station is 50MW and Annual load Factor is 60%. **8**
Find:
i) Average load ii) Demand Factor
iii) Diversity Factor iv) Energy supplied in a year

3. a) What are the factors to be considered for selection of site for a Thermal Power Station. **8**

b) Write short notes on: **8**
i) Coal Handling System ii) Ash Handling System

OR

4. a) Explain the working of Thermal Power Plant, with neat sketch. **8**

b) The maximum demand of Thermal Power plant is 300MW, with a load factor of 0.80. The plant has installed capacity of 350MW. Capital cost of the plant is Rs. 10,000 per kW. Fuel cost is Rs. 30×10^6. Maintenance & operation cost is Rs. 60×10^8. Depreciation is 10%. Calculate the cost of generation per unit. **8**

5. a) With a neat Labelled diagram, Explain the working of pumped storage Hydro Electric Plant & its Advantages. **8**

b) Explain Hydrograph & Flow duration curve with neat sketches. **8**

OR

6. a) Explain the Functions of following components of Hydro Power Plant. **8**

i) Dam ii) Penstock

iii) Surge Tank iv) Spillway

b) Calculate the total power generated from the Hydro Electric Plant, having Head of 300 Meter, catchment area is 200 sq. km. and annual rainfall is 2cm. The overall efficiency of the penstock, turbine & generator is 70%. Assume 60% of the collected water is available for power generation. **8**

7. a) What are the different types of Nuclear Reactors used in Nuclear Power Plant? Explain any one in detail. **8**

b) Explain the Advantages & Disadvantages of Nuclear Power Station in detail. **8**

OR

8. a) What is Tariff? What are the objectives of Tariff. **8**

b) An industrial consumer having maximum demand of 100kW and maintain a Load Factor of 60%. Tariff rates are Rs. 75 per kVA of maximum demand plus 15 paise per kWh of energy consumed. **8**

Calculate the total Energy consumed per year and the Annual electricity Bill, if the Average Power Factor is 0.8.

9. a) Explain the photovoltaic system integrated with grid. Also Explain Applications of Solar Energy. **8**

b) Write a short notes on solar power plant. **8**

OR

10. a) Explain the Wind Energy conversion system and its applications. **8**

b) Explain the Biomass plant and its applications. **8**

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