B.E.(with Credits)-Regular-Semester 2012-Electrical Engineering & (E. & P.) Sem III

EP 305 - Power Generation Systems

P. Pages : 2 **GUG/W/16/3733**

Time : Three Hours * 3 9 3 3 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Illustrate your answers wherever necessary with the help of neat sketches.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Use of non programmable calculator is permitted.

1. a) Define the terms connected load, maximum demand, Demand factor and load factor. Discuss the effect load factor on the cost of generation in a power system. **8**

b) State the importance of load duration curve and load survey. **8**

OR

2. a) What are the conventional sources of energy and explain briefly. **8**

b) Define the term interconnection power system. Interconnected power system can reduce the amount of generating capacity required to be installed explain. **8**

3. a) What are the types of fuels used in thermal power plants. Briefly discuss. **8**

b) What are the types of steam turbine. Briefly discuss about their use and characters. **8**

OR

4. a) How the coal is utilised in power generation. Describe how it is handled starting from delivery at coal to final combustion stux. **8**

b) What are the factors to be considered for selection of the site for a thermal power station. **8**

5. a) Classify the water turbines and describe them briefly. **8**

b) A river based hydel power plant has it's capacity as firm capacity when it operates at the peak part of the load curve. The load factor here being 15%. If the rated installed capacity of the generator, head and plant efficiency are 10MW, 50 meter and 0.8 respectively, Calculate the minimum flow of the river water in order to operate the plant at the base part of the load curve. **8**

OR

6. a) What is run off. Discuss about the Hydrograph. **8**

b) Explain the general arrangement and operation of a hydroelectric plant. **8**

7. a) List out the main parts of the reactor and briefly state their functions. **8**

b) Define the term tariff. Also explain in detail flat rate, two part, three part and block rate tariff. **8**

OR

8. a) The capital cost of a hydro power station of 100MW capacity is Rs. 1000 per kw. The annual depreciation charges are 15% of the capital cost. A royalty of Rs. 2 per nul per year and Rs. 0.03kwh generated is to be paid for using the river water for generation of power. The maximum demand of the power station is 70MW and annual load factor is 60%. Annual cost of salaries, maintenance charges etc is 10,00,000. If Wt. of this expense is also chargeable as fixed changes, calculate the generation cost in two form. **8**

b) State the advantages and disadvantages of the nuclear power station. Also state the factors to be considered for the selection of site of a nuclear power station. **8**

9. a) Explain the principle of building integrated PV system with suitable sketch. **8**

b) Explain with a neat sketch how wind energy can be converted into electrical energy. **8**

OR

10. a) List the various biomass resources. Explain with a neat sketch working of biomass power plant. **8**

b) Draw the wind power curve of a wind turbine. Also explain the significance of cut in and cut out speed of wind turbine. **8**

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