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10EE36

Third Semester B.E. Degree Examination, Dec.2016/Jan.2017
Electric Power Generation

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting atleast TWO questions from each part.***

PART – A

1 a. With a neat block diagram, explain the working of a geothermal power plant. **(06 Marks)**

b. What is co-generation? Explain with necessary block diagrams the concept of cogeneration. **(08 Marks)**

c. Write a brief note on combined heat and power distributed generation. **(06 Marks)**

2 a. Explain gas turbine power plant with a neat sketch. **(08 Marks)**

b. How do you classify the hydro electric plants? Explain clearly. **(08 Marks)**

c. What are the points to be considered for the selection of diesel power plant? **(04 Marks)**

3 a. Explain working of hydro-electric power plant, with a neat sketch. **(10 Marks)**

b. Discuss the function of elements present in thermal power plant and sketch the structure of thermal power plant. **(10 Marks)**

4 a. With a neat sketch, explain clearly the main parts of a nuclear reactor. **(10 Marks)**

b. Explain the advantages and disadvantages of nuclear power plant. Also explain the various methods of nuclear waste disposal. **(10 Marks)**

PART – B

5 a. Define the following terms as applied to power system.
i) Load Factor
ii) Demand Factor
iii) Diversity Factor
iv) Plant Capacity Factor
v) Plant Use Factor **(10 Marks)**

b. A generating station supplied the following loads: 150 MW, 120 MW, 85 MW, 60 MW and 5 MW. The station has a maximum demand of 220 MW. The annual load factor of the station is 48 percent. Calculate
i) the number of units supplied annually.
ii) the diversity factor
iii) the demand factor. **(05 Marks)**

c. A generating station has a maximum demand of 500 MW. The annual load factor is 50% and capacity factor is 40%. Find the reserve capacity of the plant. **(05 Marks)**

6 a. What is meant by tariff? Mention its objectives. **(06 Marks)**

b. With a neat sketch, explain single bus bar with sectionalizing scheme. **(06 Marks)**

c. A capital cost of a hydro-power station of 100 MW capacity is 1000 per KW. The annual depreciation charges are 15% of the capital cost. The royalty of ₹ 2 per KW per year and 0.03 per kwh generated is to be paid for using the river water for generation of power. The maximum demand on the power station is 70 MW and annual load factor is 60%. Annual cost of salaries, maintenance charges etc. is 10,00,000. If 20% of this expense is also chargeable as fixed charges, calculate the generation cost in two part form. **(08 Marks)**

7 a. With a neat sketch and phasor diagram, explain resonant grounding. **(12 Marks)**

b. With a neat sketch, explain the grounding system through an earthing transformer. **(08 Marks)**

8 a. With a neat sketch, explain ungrounded system in power system. **(10 Marks)**

b. With a neat sketch, explain solid grounding. **(10 Marks)**

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