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06EE36

Third Semester B.E. Degree Examination, May/June 2010
Electric Power Generation

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. With a neat block diagram, explain the working of a geo-thermal power plant. **(08 Marks)**

b. Explain with sketches, the working of single-basin and double basin tidal-power plant. **(06 Marks)**

c. Discuss the benefits of 'co-generation'. **(06 Marks)**

2 a. Explain the principle of working of a gas-turbine plant. Also explain open cycle and closed cycle gas-turbines. **(10 Marks)**

b. Explain with a block diagram, working of a bio-generation plant. **(05 Marks)**

c. What is 'distributed generation'? Explain. **(05 Marks)**

3 a. Mention the factors to be considered for the selection of site for a hydro-electric power plant. **(06 Marks)**

b. Discuss the functions of the following in a thermal plant:
i) Condensor ; ii) Cooling towers ; iii) Economizer **(08 Marks)**

c. Explain with a line-diagram, fuel handling system of a thermal power plant. **(06 Marks)**

4 a. State the main components of a nuclear power station. Describe the function of each. **(10 Marks)**

b. Explain the necessity of providing shield in a nuclear power-plant. **(05 Marks)**

c. Explain the operation of a fast-breeder reactor. **(05 Marks)**

PART – B

5 a. What are load curves? What information do you derive from them? What are energy load curves? **(08 Marks)**

b. A generating station supplies the following loads: 15000 kW, 12000 kW, 8500 kW, 6000 kW and 450 kW. The station has a max demand of 22,000 kW. Calculate :
i) Demand factor
ii) Diversity factor
iii) No. of units supplied annually, if the load factor is 48%. **(12 Marks)**

6 a. What is tariff? Explain : i) Max demand tariff ; ii) p.f. tariff. **(08 Marks)**

b. A generating station has a max demand of 50 MW. Calculate the cost / kwh delivered from the following data:
i) Capital cost = Rs.95×10^5
ii) Annual cost of fuel + oil = Rs.9×10^5
iii) Taxes, wages and salaries = Rs.6×10^5.
Rate of interest and deprication is 10%. Annual load factor is 50%. **(08 Marks)**

c. With the help of a neat sketch, explain "single bus-bar with sectionalizing". **(04 Marks)**

7 a. Discuss the locations of reactors in power systems. **(04 Marks)**

b. A consumer is taking a load of 20 kW at a p.f. of 0.8 (lag). Find the rating of the capacitor to raise the p.f. to 0.95 (lag). **(04 Marks)**

c. An inter connected generator reactor system is shown below in Fig.7(c). The base values for the given% reactance are the rating of individual pieces of equipment. Determine the fault currents and KVA (fault) for a short circuit fault at F. Assume base MVA as 20 MVA and bus – bar voltage as 11 kV (L-L). **(12 Marks)**

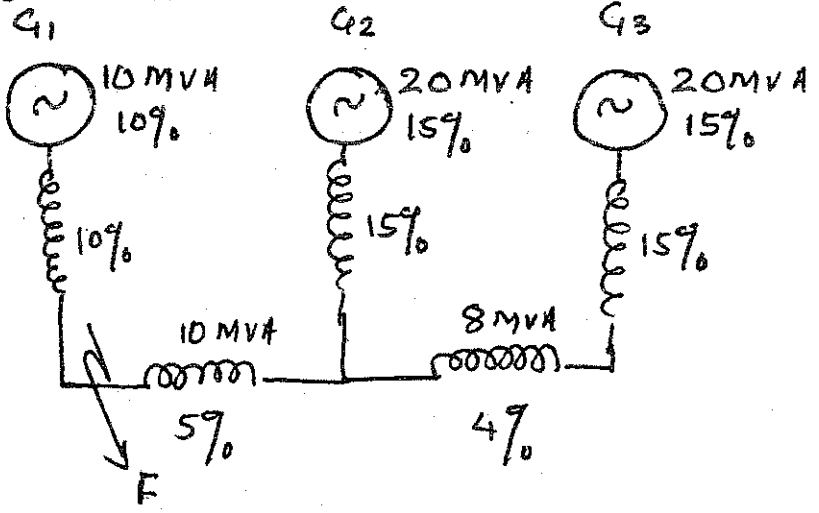

Fig.7(c).

8 a. Determine the value of inductance of arc suppression coil to neutralize the charging current of overhead line having line to ground capacitance of 0.4 μF. If the supply frequency is 100 Hz and the operating voltage is 132 kV, find the KVA rating of the coil. **(06 Marks)**

b. Discuss the advantages of grounding. **(04 Marks)**

c. How are sub-stations classified? **(04 Marks)**

d. Write briefly on:

i) Resonant grounding

ii) Earthing transformer. **(06 Marks)**

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