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Third Semester B.E. Degree Examination, June–July 2009
Electric Power Generation

Time: 3 hrs.   Max. Marks:100

Note : *1. Answer any FIVE full questions, selecting atleast TWO questions from each part.*
2. Assume missing data if any.

PART - A

1 a. Explain the working of Wind Energy conversion system with block diagram.
   (08 Marks)
   b. Explain the concept of co-generation plant with neat block diagram.   (06 Marks)
   c. Write a short note on fuel cells.   (06 Marks)

2 a. What are the points to be considered for site selection of Diesel power plant?
   (06 Marks)
   b. Explain how the use of regenerator, inter cooler and reheater in gas turbine plants help in improvement of thermal efficiency.   (09 Marks)
   c. Explain the concept of distributed generation.   (05 Marks)

3 a. Classify Hydro Electric plants based on   i) Water flow regulation   ii) Head
   iii) Load.   (04 Marks)
   b. Explain with neat sketch the working of medium head power plant.   (06 Marks)
   c. Explain with line diagram fuel handling system of Modern Thermal Power Plant.
   (04 Marks)
   d. Explain with neat sketch, the working of electro static precipitator used for dust collection in thermal plant.   (06 Marks)

4 a. What are the merits and demerits of Nuclear Power Plant?   (06 Marks)
   b. Draw a neat diagram of Pressurized Water Reactor and explain its advantages, disadvantages.   (08 Marks)
   c. With a schematic diagram, explain operation of Fast Breeder Reactor.   (06 Marks)

PART - B

5 a. Explain the following terms as applied to power system.
   i) Load factor   ii) Plant capacity factor   iii) Plant use factor   iv) Demand factor.   (08 Marks)
   b. Find i) Maximum demand   ii) Daily Energy consumption   iii) Load factor of power supply system having following loads.

Type of Load	Maximum Demand (kW)	Load factor	Diversity factor of group
1) Residential	1000	20	1.2
2) Commercial	2000	25	1.1
3) Industrial	10,000	80	1.25

What are the connected loads under each category if the Demand factors for residential, commercial and industrial loads are 80, 90 and 100% respectively?
   (12 Marks)

6 a. Define Tariff. Explain i) Block rate tariff   ii) Two part tariff   iii) KVA Maximum Demand Tariff. **(06 Marks)**

b. What are the causes of low power factor? Discuss the disadvantages of having low power factor. **(08 Marks)**

c. With the help of neat sketch, explain :   i) Main and Transfer Bus bar scheme.
   ii) Single Bus bar with sectionalizing scheme. **(06 Marks)**

7 a. Explain the steps for calculating the symmetrical 3 – phase short circuit currents. **(05 Marks)**

b. An inter connected generator reactor system has been shown in Fig.Q7(b). The base values for the given % reactances are the rating of the individual pieces of equipment. Determine the fault currents and KVA (fault) for a short circuit fault at F. Assume bus bar voltage (L-L) 11KV. **(10 Marks)**
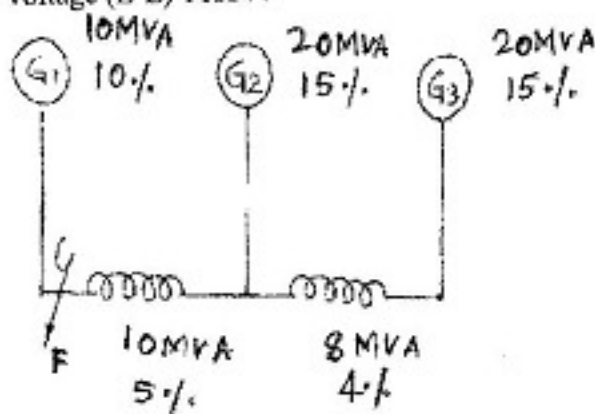

Fig.7(b)

c. With a neat sketch, explain ungrounded system. **(05 Marks)**

8 a. Explain with neat sketch i) Solid grounding   ii) Resistance grounding. **(08 Marks)**

b. With a neat sketch, explain the grounding system through an earthing transformer. **(06 Marks)**

c. Calculate the reactance and KVA rating of coil suitable for 33KV, 3 – phase, 50 Hz transmission system of which the capacitance to earth of each conductor is 4.5 micro farads. **(06 Marks)**