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NEW SCHEME

Fifth Semester B.E. Degree Examination, July 2007
Electrical and Electronics Engineering
Electrical Power Generation

Time: 3 hrs.] [Max. Marks:100

Note : ***1. Answer any FIVE full questions.***
2. Any missing data may be suitably assumed.

1 a. Explain how the hydroelectric plants are classified. **(10 Marks)**

b. The average weekly discharge (Q) measured at a site is given below :

Week	1	2	3	4	5	6	7	8	9	10
Q(m^3/sec)	500	500	350	200	300	800	1100	900	400	200

i) Calculate the average discharge available.
ii) Plot the hydrograph.
iii) Plot flow-duration curve. **(10 Marks)**

2 a. What are the factors to be considered for selection of the site for a thermal power plant? Discuss in detail. **(10 Marks)**

b. Describe the schematic arrangement of a thermal power station and explain the functions of each briefly. **(10 Marks)**

3 a. What are nuclear fuels? Classify the nuclear reactors. Briefly explain the pressurized water reactor. **(12 Marks)**

b. Explain the function of the following in a nuclear reactor :
i) Control rod
ii) Moderator
iii) Reflector
iv) Biological shield. **(08 Marks)**

4 a. Explain the working of a gas turbine power plant with a schematic diagram. **(08 Marks)**

b. List the advantages and disadvantages of a diesel power station. **(06 Marks)**

c. Briefly explain the main three components of a diesel power plant. **(06 Marks)**

5 a. Define the following terms in generation :
i) Plant capacity factor
ii) Load factor
iii) Average load. **(08 Marks)**

b. A power station is to supply 4 regions of loads whose peak loads are 10,000 kW, 5000 kW, 8000 kW and 7000 kW. The diversity factor of the station is 1.5 and the average annual load factor is 60%. Calculate the maximum demand on the station and the annual energy supplied from the station. Suggest the installed capacity and the number of units taking 50% rise in the maximum demand in next 5 years. **(12 Marks)**

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6 a. Distinguish between the fixed and operating cost of power plants. List the factors, which constitute the above costs. **(08 Marks)**

b. What are the methods used to improve the power factor? **(04 Marks)**

c. A single phase 400 V, 50 c/s motor takes a supply current of 50 A at a power factor of 0.6 lagging. The motor power factor has been improved to 0.9 lagging by connecting a condenser in parallel. Calculate the capacity of the condenser required. **(08 Marks)**

7 a. Define a substation and mention different types of substations. **(06 Marks)**

b. How the current limiting reactors classified on their location in the power system? **(10 Marks)**

c. Explain ring bus arrangement. **(04 Marks)**

8 a. List the merits and demerits of single busbar systems. **(04 Marks)**

b. Explain :

i) Resistance grounding

ii) Reactance grounding **(10 Marks)**

c. List the advantages of neutral grounding. **(06 Marks)**

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