CBCS Scheme

USN | | | | | | | | | | |

15EE42

Fourth Semester B.E. Degree Examination, June/July 2017
Power Generation and Economics

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Define : i) hydrograph ii) flow duration curve and mass curve. **(06 Marks)**

b. Explain the factors to be considered for selection of site for hydro-electric power plant. **(05 Marks)**

c. Give the classification of hydro power plant. **(05 Marks)**

OR

2 a. Explain the essential elements of hydro power plant with neat schematic diagram. **(06 Marks)**

b. Explain the governing mechanism of hydraulic impulse turbine and reaction turbine with neat sketches. **(06 Marks)**

c. Discuss the merits and demerits of hydro power plant. **(04 Marks)**

Module-2

3 a. Explain the working of steam power plant with neat schematic diagram. **(06 Marks)**

b. Explain the techniques of dust collection in thermal power station. **(06 Marks)**

c. Explain the function of air-preheater and economizer in thermal plant. **(04 Marks)**

OR

4 a. Mention the application of diesel electric power plant. **(05 Marks)**

b. With neat sketch, explain the working of a gas turbine plant. **(06 Marks)**

c. Give the comparison of hydro power plant with stream power plant. **(05 Marks)**

Module-3

5 a. Explain the nuclear reactor with neat diagram. **(06 Marks)**

b. List the advantages and disadvantages of nuclear power plant. **(05 Marks)**

c. Describe construction and working of a pressurized water reactor. **(05 Marks)**

OR

6 a. Explain the working operation of nuclear power plant with neat sketch. **(06 Marks)**

b. Give the various classifications of nuclear reactor and explain anyone. **(04 Marks)**

c. Explain the function of moderator, control rod, coolant in nuclear power plant. **(06 Marks)**

Module-4

7 a. Explain resonant grounding with a neat diagram. **(06 Marks)**

b. Explain the function of transformer, high voltage circuit breaker and high voltage insulator in substation. **(06 Marks)**

c. Draw a neat single diagram of substation and explain it. **(04 Marks)**

OR

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

b. A 230V, 3ϕ, 50Hz, 200 km transmission has a capacitance to earth of 0.01mF/km per phase. Calculate the inductance and KVA rating of Peterson coil used for earthling the above system. **(05 Marks)**

c. Explain double bus without sectionlisation. **(05 Marks)**

Module-5

9 a. Define the following terms :
i) Load factor ii) diversity factor iii) plant use factor. **(06 Marks)**

b. A generating station has 3×50 MW units. The station output is 876×10^6 KWH per annum. The maximum demand is 120 MW calculate : **(06 Marks)**
i) average load on the station
ii) annual load factor
iii) annual capacity factor.

c. Explain the factors affecting tariff. **(04 Marks)**

OR

10 a. Explain : i) two part tariff ii) power factor tariff iii) maximum demand tariff. **(06 Marks)**

b. Discuss various methods of power factor improvement. **(04 Marks)**

c. Calculate the annual energy cost of an industrial consumer who takes a load of 20 KW for 1 hour per day, 150 KW for 7 hours per day and 50 KW for 8 hours/day. The tariff in force is Rs. 20 per kilowatt of maximum demand and 10 paise per KWH. Assume 6 working days in a weak. **(06 Marks)**

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