

CBCS Scheme

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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)

1 of 2

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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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, 3 ϕ , 50Hz, 200 km transmission has a capacitance to earth of 0.01 mF/km per phase. Calculate the inductance and KVA rating of Peterson coil used for earthing the above system. (05 Marks)
c. Explain double bus without sectionalisation. (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 \times 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 week. (06 Marks)
