



CBCS SCHEME

18EE42

Fourth Semester B.E. Degree Examination, Jan./Feb. 2021 Power Generation and Economics

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain with neat sketch, the working of hydro – electric power plant station and explain the function of each component. (10 Marks)
b. Explain the classification of Hydraulic Turbines. (10 Marks)

OR

- 2 a. Explain with neat sketch, the working of governing mechanism of Hydraulic Impulse turbine. (10 Marks)
b. Discuss merits and demerits of Hydro power plant. (04 Marks)
c. Define i) Hydrograph ii) Flow duration curve iii) Mass curve. (06 Marks)

Module-2

- 3 a. Explain Impulse and Reaction steam turbines. (06 Marks)
b. Write short notes on :
i) Electrostatic precipitator ii) Under feed stokers. (06 Marks)
c. Discuss in brief the methods of improving thermal efficiency of gas turbine power plants. (08 Marks)

OR

- 4 a. Draw a layout of Diesel Power plant, showing the various systems including cooling , lubrication, starting, intake and exhaust system and explain the working. (10 Marks)
b. Explain the techniques of dust collection in Thermal power station. (06 Marks)
c. Give the application of Diesel Power plant. (04 Marks)

Module-3

- 5 a. With a neat sketch, explain the working of main parts of Nuclear power station. (08 Marks)
b. Mention the factors to be considered for selection of Nuclear Power plant. (06 Marks)
c. Explain briefly about Nuclear waste disposal (06 Marks)

OR

- 6 a. With a neat sketch, explain the working of Fast Breeder Reactor. Also mention its advantages. (08 Marks)
b. Discuss different Shielding methods used for Nuclear Reactions. (06 Marks)
c. Explain the function of the following in a Nuclear reactor :
i) Control rod ii) Moderator iii) Reactor core. (06 Marks)

Module-4

- 7 a. With a neat sketch, explain the single bus – bar with bus sectionalizer. (08 Marks)
b. What are the functions of Sub – station? (06 Marks)
c. Explain : i) Resistance Grounding ii) Resonance Grounding. (06 Marks)

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.

OR

- 8 a. Explain the Gas insulated sub – station and mention its advantages. (08 Marks)
b. List out the advantages and disadvantages of Outdoor substation over Indoor substation. (06 Marks)
c. With a neat diagram, explain the working of HRC fuse. (06 Marks)

Module-5

- 9 a. What is Power factor? Explain any one method of Improving power factor. (06 Marks)
b. Write a short note on classification of costs. (06 Marks)
c. An industrial consumer having a maximum demand of 100 kN, maintains a load factor at 60%. The tariff rates are Rs 900 per KVA of maximum demand per annum plus Rs 1,800 per KWh of energy consumed. If the average power factor is 0.8 lagging , calculate the total energy consumed per annum and annual electricity bill. Also workout the overall cost per KWh consumed. (08 Marks)

OR

- 10 a. A 300 KVA distribution transformer costs Rs 20,000 = 00 and has a salvage value of Rs 1000 at the end of 20 years. Determine the depreciated value of the transformer at the end of 10 years on the following method of assessment :
i) Straight line depreciation.
ii) Sinking fund depreciation of 8% compounded annually. (08 Marks)
b. Describe different types of consumers and their tariffs. (06 Marks)
c. Define : i) Hot Reserve ii) Operating Reserve iii) Spinning Reserve. (06 Marks)
