

CBCS SCHEME

17ME71

Seventh Semester B.E. Degree Examination, Jan./Feb. 2021 Energy Engineering

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the principle of over feed stokes with neat diagram. (10 Marks)
b. Explain Hydraulic ash handling process, with a neat sketch. (10 Marks)

OR

- 2 a. A chimney is 28m height and temperature of hot gases inside is 320°C. The temperature of outside air is 23°C and furnace is supplied with 15kg of air per kg of coal burnt. Calculate
i) Draught in mm of water ii) Draught head in meters of hot gases. (10 Marks)
b. Explain the central or bin system of burning pulverised coal. (10 Marks)

Module-2

- 3 a. With a neat diagram, explain the general layout of diesel power plant. (10 Marks)
b. Explain the general layout of hydroelectric power plant, with a neat diagram. (10 Marks)

OR

- 4 a. Classify the hydroelectric power plants on the basis of head. Explain each type of plant in detail. (10 Marks)
b. With a neat diagram, explain Pump Fuel injection system. (10 Marks)

Module-3

- 5 a. Explain Pyranometer with neat sketch to measure beam and diffused radiations. (10 Marks)
b. With a neat diagram, explain typical solar flat plate collector. (10 Marks)

OR

- 6 a. What are the main advantages of solar - cell? Explain the conversion of solar energy to electricity through photovoltaic cell. (10 Marks)
b. Explain Phase change (Latent heat) heat storage concept. Explain the properties of materials used in latent heat storage. Comment on Latent heat storage materials. (10 Marks)

Module-4

- 7 a. Derive an expression for the power of wind mill with condition. (10 Marks)
b. With neat diagram, explain Single basin storage Tidal Power Plant and also comment on the advantages of Tidal Power Plant (Tidal). (10 Marks)

OR

- 8 a. Explain the typical horizontal axis wind mill, with a neat sketch. (10 Marks)
b. What are the different resources that can be used as Biomass for biogas generation? (10 Marks)

Module-5

- 9 a. Describe the photosynthesis process with relevant chemical reactions. Also explain the importance of photosynthesis in biofuel generation. (10 Marks)
b. Explain closed Rankine cycle OTEC system with neat sketch. (10 Marks)

OR

- 10 a. Explain with a neat sketch, the water dominated Geothermal system. (10 Marks)
b. What is the work of fuel cell? Explain typical H₂O₂ fuel cell with a neat sketch. (10 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.

