



10ME53

Fifth Semester B.E. Degree Examination, Feb./Mar. 2022
Energy Engineering

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, selecting at least TWO questions from each part.

PART – A

- 1 a. With a neat sketch, explain the working of Central or Bin System. Mention its advantages. (10 Marks)
b. With a neat sketch, explain the working of spreader stoker. Mention its advantages. (10 Marks)
- 2 a. With neat sketch, explain the working of Benson boiler. (06 Marks)
b. With neat sketch, explain the Economizer and Air preheater. (06 Marks)
c. What is draught? Classify different types of draughts. Explain with a neat sketch, the balanced draught. (08 Marks)
- 3 a. Write the application of diesel engines in power field. (08 Marks)
b. Explain different methods of starting the diesel engine. (06 Marks)
c. Explain the necessary of the cooling system in a diesel engine. (06 Marks)
- 4 a. Define hydrograph and explain the functions of Surge tank. (06 Marks)
b. At a particular site the mean discharge (in millions of m³) of a river in 12 months from January to December are 30, 25, 20, 0, 10, 50, 80, 100, 110, 65, 45, 30 respectively.
(i) Draw the hydrograph and find the mean flow.
(ii) Draw the flow duration curve.
(iii) Find the power developed. If the head available is 90 m and the overall efficiency of generation is 86 percent. Assume each month of 30 days. (14 Marks)

PART – B

- 5 a. Explain the principle of release of nuclear energy by fusion and fission reactions. (05 Marks)
b. Classify nuclear reactor. Explain BWR reactor with sketch giving its merits and demerits. (10 Marks)
c. Write a note on radioactive waste disposal. (05 Marks)
- 6 a. With a neat sketch, explain working principle of solar flat plate solar collector. (08 Marks)
b. With a neat sketch, explain working principle of solar pond. (06 Marks)
c. With a neat sketch, explain the horizontal axis wind mill. (06 Marks)
- 7 a. What are the different Tidal energy conversion methods? And with a neat sketch, explain two basin with linked basin method. (06 Marks)
b. With a neat sketch, explain the working principle of open cycle OTEC system. (08 Marks)
c. With a neat sketch, explain the working principle of vapour dominated geothermal power plant. (06 Marks)
- 8 a. Write the advantages and disadvantages of bio-mass. (05 Marks)
b. What are the factors affecting biogas generation? (05 Marks)
c. How are the gasifiers classified? With a schematic diagram, explain the working of up draught gasifier. (10 Marks)

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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.