

CBGS SCHEME

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18ME81

Eighth Semester B.E. Degree Examination, Dec.2024/Jan.2025

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. With a relevant flow chart, explain the various steps involved in coal handling. (10 Marks)
- b. With a neat sketch, explain the working principle of Benson Boiler. (10 Marks)

OR

- 2 a. Explain the functions of following Boiler accessories with a neat sketch :
i) Air preheater ii) Super heater iii) Economizer iv) Reheater. (10 Marks)
- b. With a neat sketch, discuss the construction and working of :
i) Natural draught cooling tower ii) Induced draught cooling tower. (10 Marks)

Module-2

- 3 a. With a neat sketch, explain the working principle of pyranometer as a solar radiation measuring instrument. (10 Marks)
- b. Briefly explain the working of solar pond with neat sketch. Also list the application of Solar energy. (10 Marks)

OR

- 4 a. With a neat sketch, explain the construction and working of KVIC Bio gas plant. (10 Marks)
- b. Briefly explain the following :
i) Photosynthesis ii) Factors affecting biogas generation. (10 Marks)

Module-3

- 5 a. Explain the working of single and double basin tidal power plant with neat sketch. (10 Marks)
- b. List the advantages and disadvantages of geothermal energy. Briefly explain the problems associated with geothermal energy. (10 Marks)

OR

- 6 a. With a neat sketch, explain the basic components involved in wind energy convention system. (10 Marks)
- b. Classify the various geothermal energy sources. With a neat sketch, interpret the working of vapour dominated geothermal power plant. (10 Marks)

Module-4

- 7 a. Elaborate the working of closed cycle OTEC plant [Rankine / Anderson cycle] with a neat sketch. (10 Marks)
- b. Mean weekly discharge for 12 weeks of a river is given below :

Week	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th
Discharge (m ³ /sec)	100	200	300	1200	600	900	800	600	1000	600	400	200

- i) Draw Hydrograph and Flow duration curve.
- ii) If the available head is 100 m and overall efficiency is 85%. Find the power available at mean flow of water. (10 Marks)

OR

- 8 a. With a neat sketch, explain the working of pumped storage hydro – electric power plant. Also state any 3 advantages and disadvantages of hydroelectric power. (10 Marks)
- b. Write a short note on the following :
i) Surge tank ii) Draft tube iii) Water hammer iv) Spill way. (10 Marks)

Module-5

- 9 a. With a neat sketch, explain the general components of a nuclear reactor. (10 Marks)
- b. Write a short note on :
i) Nuclear fusion and Fission ii) Nuclear fuels iii) Thermal utilization factor
iv) Multiplication factor. (10 Marks)

OR

- 10 a. With a neat sketch, explain the working of Pressurized Water Reactor (PWR). (10 Marks)
- b. List any five advantages and disadvantages of nuclear power plant. Also write a short note on nuclear waste and its disposal. (10 Marks)
