

CBCS SCHEME

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18ME81

Eighth Semester B.E. Degree Examination, July/August 2022 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. Briefly explain the various step involved in coal handling. (10 Marks)
- b. With a neat sketch, explain the working principle of Benson boiler. (10 Marks)

OR

- 2 a. With a neat sketch, explain the functions of super heater and air pre heater in thermal power plant. (10 Marks)
- b. With a neat sketch, explain the working of Induced draught cooling tower. (10 Marks)

Module-2

- 3 a. Name solar radiation measuring instruments and explain pyranometer with a neat sketch to measure beam and diffused radiation. (10 Marks)
- b. With the help of a neat sketch, explain the construction and working principle of solar pond. (10 Marks)

OR

- 4 a. Explain the working of Down draft gasifier with a neat sketch. (10 Marks)
- b. With a neat sketch, explain the working principle of Janta biogas digester. (10 Marks)

Module-3

- 5 a. With a neat sketch, explain the working of Hot dry rock geothermal plant. (10 Marks)
- b. With a neat sketch, explain the arrangement of single basin and double basin for tidal power plant. (10 Marks)

OR

- 6 a. With a block diagram, explain the basic components of wind energy conversion system. (10 Marks)
- b. With a neat sketch, explain horizontal axis and vertical axis wind machines. (10 Marks)

Module-4

- 7 a. With a neat sketch, explain pumped storage hydroelectric power plant.
 b. The runoff data of a river at a particular site is tabulated below:

Month	Mean discharge per month (millions of m ³)	Month	Mean discharge per month (millions of m ³)
January	40	July	75
February	25	August	100
March	20	September	110
April	10	October	60
May	0	November	50
June	50	December	40

- (i) Draw a hydrograph and find the mean flow.
 (ii) Also draw the flow duration curve.
 (iii) Find the power in MW available at mean flow if the head available is 80 m and overall efficiency of generation is 85%. Take each month of 30 days.

(10 Marks)

OR

- 8 a. With a diagram, explain closed Rankine cycle OTEC system. (10 Marks)
 b. List the problems associated with Ocean Thermal Energy Conversion (OTEC). (04 Marks)
 c. Explain the following terms related to hydroelectric power plant:
 (i) Surge tank. (ii) Penstock (06 Marks)

Module-5

- 9 a. Explain the principle of release of nuclear energy by fusion and fission reaction. (10 Marks)
 b. Write a short note on Nuclear fuels used in the reactors. (05 Marks)
 c. Explain : (i) Thermal utilization factor. (ii) Multiplication factor. (05 Marks)

OR

- 10 a. Explain the following:
 (i) Reactor shielding.
 (ii) Radioactive waste disposal. (10 Marks)
 b. With a neat sketch, explain the working of Pressurized Water Reactor (PWR). (10 Marks)
