18ME81

Eighth Semester B.E. Degree Examination, June/July 2023
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. What is pulvarised coal? What are the advantages and limitations of pulvarised coal?
                                                                      (10 Marks)
   b. Briefly explain the various steps involved in coal handling.   **(10 Marks)**

OR

2 a. Explain the working principle of Benson boiler, with a neat sketch.   **(10 Marks)**
   b. Explain common methods used for controlling super heat temperature of the steam.
                                                                      (10 Marks)

Module-2

3 a. Explain the working principle of pyranometer and pyrheliometer with a neat sketch.
                                                                      (10 Marks)
   b. With the help of a neat sketch, explain the extraction of solar energy from solar ponds.
                                                                      (10 Marks)

OR

4 a. Explain the working of floating drum biogas plant with a neat sketch.   **(10 Marks)**
   b. Explain the working of updraft gasifier with a neat sketch.   **(10 Marks)**

Module-3

5 a. With a neat sketch, explain the working of vapor dominated geothermal power plant.
                                                                      (10 Marks)
   b. With a neat sketch explain the harnessing tidal energy by the arrangement of double basin tidal power plant.   **(10 Marks)**

OR

6 a. What are the properties of wind and explain the problems associated with the wind power.
                                                                      (10 Marks)
   b. With a neat sketch, explain Darrieus type wind machines and list the advantages and disadvantages.   **(10 Marks)**

Module-4

7 a. With a neat sketch, explain medium and low head power plant (hydroelectric).   **(10 Marks)**
   b. The mean monthly discharge for 12 months at a particular site of river is tabulated below:

Month	Discharge in millions of Cubic meter/month	Month	Discharge in millions of Cubic meter/month
May	500	October	2000
June	200	November	1500
March	1500	December	1500
July	2500	January	1000
August	3000	February	800
September	2400	March	600

(i) Draw hydrograph and flow duration curve for the above and find average monthly flow.

(ii) Determine the power available at mean flow of water if available head is 80 m at the site and overall efficiency of generation is 80%. Take 30 days in a month. **(10 Marks)**

OR

8 a. With a diagram, explain Open cycle or Claude cycle OTEC system. **(10 Marks)**
   b. With a diagram, explain Closed or Anderson OTEC system. **(10 Marks)**

Module-5

9 a. Explain the principle of radioactive decay, half life, fusion and fission in nuclear energy. **(10 Marks)**
   b. Explain with neat sketch of components of nuclear reactor. **(10 Marks)**

OR

10 a. Explain the working principle of pressurized water reactor with a neat sketch. **(10 Marks)**
    b. Explain the working principle of homogeneous graphite reactor and gas cooled reactor (indirect circuit gas cooled reactor) with a neat sketch. **(10 Marks)**

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