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10ME53

**Fifth Semester B.E. Degree Examination, June/July 2018**  
**Energy Engineering**

Time: 3 hrs.

Max. Marks: 100

**Note: Answer any FIVE full questions, selecting atleast TWO full question from each Part.**

**PART - A**

- 1 a. With a neat sketch, explain the unit system of Pulverized fuel burning. (06 Marks)  
b. Explain Pulverized fuel burners, with sketches. (08 Marks)  
c. Explain pneumatic ash handling system, with neat diagram. (06 Marks)
  - 2 a. Give comparison between Forced and Induced draughts. (06 Marks)  
b. Explain Benson boiler with a neat diagram and state their advantages. (08 Marks)  
c. What is the purpose of super heater? What are the factors responsible for super heater fouling? (06 Marks)
  - 3 a. What are the different fields where use of diesel power plant is essential? (06 Marks)  
b. With the help of neat diagram, explain the working principle of forced cooling system. (08 Marks)  
c. Name the different types of fuel injection system. Explain any one with a neat sketch. (06 Marks)
  - 4 a. Explain Storage, Pondage and Pumped storage hydro electric plants. (06 Marks)  
b. The mean monthly discharge at a hydel power plant site is given below: The discharge is in  $m^3/sec$ . Draw i) Hydrograph and ii) Flow duration curve. (08 Marks)
- |           |     |     |     |     |     |     |      |      |     |     |     |     |
|-----------|-----|-----|-----|-----|-----|-----|------|------|-----|-----|-----|-----|
| Month     | 1   | 2   | 3   | 4   | 5   | 6   | 7    | 8    | 9   | 10  | 11  | 12  |
| Discharge | 100 | 225 | 300 | 600 | 750 | 800 | 1000 | 1200 | 900 | 600 | 400 | 200 |
- c. Write a note on Surge tank. (06 Marks)

**PART - B**

- 5 a. Give the functions of : i) Reflector ii) Control rods iii) Moderator. (06 Marks)  
b. Explain Sodium graphite reactor, with neat sketch. (08 Marks)  
c. List the Nuclear Power Plants in INDIA, with its centre of location and their capacity of power generation. (06 Marks)
- 6 a. Explain Pyrheliometer, with a sketch. (06 Marks)  
b. Sketch and explain a Solar pond. (08 Marks)  
c. Explain the working principle of vertical axis wind mill, with neat diagram. (06 Marks)
- 7 a. What are the limitations of Tidal energy? (06 Marks)  
b. Explain Open cycle OTEC, with neat sketch. (08 Marks)  
c. What are the Environmental Problems Associated, with Geothermal conversion? (06 Marks)
- 8 a. Mention the advantages and disadvantages of bio – mass energy. (06 Marks)  
b. What is an Aerobic Fermentation? Explain the stages of bio – gas production from organic waste by an Aerobic fermentation. (08 Marks)  
c. Write a note on Thermo chemical method to extract energy from bio – mass. (06 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.