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18ME651

## Sixth Semester B.E. Degree Examination, July/August 2022 Non Conventional Energy Sources

Time: 3 hrs.

Max. Marks: 100

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

### Module-1

- 1 a. With neat sketch explain hydro power plant. (10 Marks)  
b. List the advantages and disadvantages of non-conventional energy sources. (10 Marks)

OR

- 2 a. With a neat sketch, explain pyrheliometer. (10 Marks)  
b. What is need of alternative energy sources? Explain by considering solar energy. (10 Marks)

### Module-2

- 3 a. Define : (i) Solar latitude (ii) Declination angle (iii) Zenith angle  
(iv) Hour angle (v) Surface azimuth angle (10 Marks)  
b. With a neat sketch, explain working principle of solar pond. (10 Marks)

OR

- 4 a. With neat sketch, explain solar energy water heating. (10 Marks)  
b. Explain the following:  
(i) Sensible heat storage. (ii) Latent heat storage. (10 Marks)

### Module-3

- 5 a. List and explain the various parameters that effect the performance of flat plate collectors. (10 Marks)  
b. Write notes on collector efficiency factor and collector flow factor. (10 Marks)

OR

- 6 a. With a neat sketch, explain photovoltaic conversion. (10 Marks)  
b. Explain the application of solar cell for traffic lighting with a circuit diagram. (10 Marks)

### Module-4

- 7 a. List the types of wind mills. Explain horizontal axis wind machine. (10 Marks)  
b. List the advantages, disadvantages and applications of wind energy. (10 Marks)

OR

- 8 a. With a neat sketch, explain the operation of tidal power plant. (10 Marks)  
b. List the advantages and disadvantages of Tidal plants. (10 Marks)

### Module-5

- 9 a. With a neat sketch, explain Geothermal energy system by Hot Dry Rock (HDR). (10 Marks)  
b. List and explain the problems associated with geothermal system operation. (10 Marks)

OR

- 10 a. Explain the biomass sources available for biogas generation. (10 Marks)  
b. With neat sketch, explain Batch type Biogas plants. (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.