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10ME754

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024
Non – Conventional Energy Sources

Time: 3 hrs. Max. Marks:100

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

PART – A

1 a. List out all the Commercial Energy Sources. Explain any one. **(08 Marks)**
b. What are the advantages of Renewable Energy sources? **(04 Marks)**
c. Write short notes on : i) Bio – gas ii) Water power. **(08 Marks)**

2 a. Define Solar Constant. **(04 Marks)**
b. Explain how Pyrheliometers measures beam radiation. **(08 Marks)**
c. Define the following : i) Incident angle ii) Solar azimuth angle iii) Zenith angle iv) Altitude angle. **(08 Marks)**

3 a. Explain the principle of Conversion of Solar Energy into heat. **(08 Marks)**
b. Explain the working principle of Solar Air - heaters. **(06 Marks)**
c. Differentiate between Active and Passive Heating systems. **(06 Marks)**

4 a. What are the Thermal Losses considered for performance of Solar collector? **(06 Marks)**
b. What is Transmissivity of cover system? **(08 Marks)**
c. Define Collector efficiency. **(06 Marks)**

PART – B

5 a. Explain with a simple block diagram, the Photovoltaic System for Power Generation. **(08 Marks)**
b. Explain with a simple block diagram, the Energy Conversion in Wind mills. **(08 Marks)**
c. Differentiate between Horizontal and Vertical axis of Wind mill system. **(04 Marks)**

6 a. Explain the working of Rankine OTEC cycle. **(08 Marks)**
b. Explain the Wet steam fields of Geo – thermal Energy conversion. **(08 Marks)**
c. What are the advantages of Tidal Energy? **(04 Marks)**

7 a. What are the phases of Anaerobic digestion in Biogas generation? **(08 Marks)**
b. List out all the factors effecting the generation of Biogas. **(08 Marks)**
c. What are the advantages of Biogas plants? **(04 Marks)**

8 a. What are the five principle methods of Hydrogen Storage? Explain any one. **(08 Marks)**
b. Explain the Electric Power generation with Hydrogen. **(06 Marks)**
c. What are properties of Hydrogen? **(06 Marks)**

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