

**III B. Tech II Semester Regular/Supplementary Examinations, October/November - 2020**  
**GREEN ENGINEERING SYSTEMS**

(Common to Mechanical Engineering, Automobile Engineering)

Time: 3 hours

Max. Marks: 70

- Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B**)  
2. Answer **ALL** the question in **Part-A**  
3. Answer any **FOUR** Questions from **Part-B**
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**PART -A**

**(14 Marks)**

1. a) What is terrestrial solar radiation? [2M]
- b) Give different types of Concentrating type collectors. [2M]
- c) What are the main applications of geothermal energy? [2M]
- d) What are the precautions to be taken in the case of energy-efficient motor applications? [3M]
- e) What is the need for vegetable-based cutting fluids? [3M]
- f) Name different environment-friendly materials used in green buildings. [2M]

**PART -B**

**(56 Marks)**

2. a) Explain the construction and principle of operation of a sunshine recorder. [7M]
- b) What is a solar pond? Explain how energy stored in a solar pond with a suitable diagram? [7M]
3. a) With the help of a schematic diagram, explain a solar passive-space cooling system. [7M]
- b) What are the various characteristics of the wind? Discuss the advantages and disadvantages of horizontal and vertical axis windmills. [7M]
4. a) Explain in detail aerobic digestion and different phases and the process involved in it. [7M]
- b) Explain various methods to extract geothermal energy. [7M]
5. a) What is the role of energy-efficient compressors and pumps in energy-efficient systems? Explain. [7M]
- b) Explain why centrifugal machines offer the greatest savings when used with variable speed drives? [7M]
6. a) List the factors which involve in the selection of environmentally friendly materials in manufacturing. [7M]
- b) Explain how alternate casting and joining techniques improve efficiency? [7M]
7. a) Explain the role of sustainable methods in the planning of sites for green buildings. [7M]
- b) What are alternate sources for green buildings? Explain them. [7M]

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