

III B. Tech II Semester Supplementary Examinations, April - 2021**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) Define solar irradiance of solar radiation. [2M]
- b) State photovoltaic effect. [2M]
- c) What is the origin of biomass energy? [2M]
- d) What are the environment friendly and energy efficient compressors and pumps? [3M]
- e) Give environmental impact of current systems over green manufacturing systems. [3M]
- f) What is the role of bamboo and timber in environmental friendly building systems? [2M]

PART -B**(56 Marks)**

2. a) Define beam, diffused and global radiation. Derive an expression for total radiation on a tilted Surface. [7M]
- b) Explain the constructional details of a flat plate collector with a suitable diagram and mention the main advantages? [7M]
3. a) Write notes on: (i) Solar distillation; (ii) Solar drying. [7M]
- b) Give an account of main components in a Horizontal Axis Wind turbine with a neat layout sketch. [7M]
4. a) Discuss the principle of OTEC. Explain the working and analysis of open cycle system. [7M]
- b) Explain with sketches, the various methods of tidal power generation and explain difficulties in tidal power. [7M]
5. a) What are the requirements of energy efficient motors? Discuss briefly. [7M]
- b) Give various efficient control methods used for heating, ventilation and air conditioning. [7M]
6. a) Explain the major benefits of green manufacturing systems. [7M]
- b) Explain various components of a green building. [7M]
7. a) List out the construction material used in green buildings and explain briefly. [7M]
- b) What are the requirements of green building for maximum comfort? [7M]
