

M. Tech. Mechanical Engineering Design (CBCS) Semester-III
MED32(C) - Open Elective - Renewable Energy Technology

P. Pages : 1

Time : Three Hours



GUG/S/25/14205

Max. Marks : 70

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- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. Attempt **any five** questions.

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| 1. | a) | Describe the future of non-conventional energy sources in India. | 7 |
| | b) | Describe today's energy position in India. | 7 |
| 2. | a) | Discuss briefly (i) Thermal chemical storage (ii) Electrical storage. | 6 |
| | b) | Define the following angles; (i) Latitude angle (ii) Hour angle (iii) Zenith angle (iv) Surface azimuth angle. | 8 |
| 3. | a) | Explain the devices used for measuring solar radiation. | 8 |
| | b) | State the advantages, disadvantages, and applications of solar energy. | 6 |
| 4. | a) | Explain conventional solar air heaters. List the advantages and disadvantages of solar air heaters. | 8 |
| | b) | How are solar collectors classified? Explain any two concentrating collectors. | 6 |
| 5. | a) | What is a photovoltaic cell? Explain briefly with a neat sketch of a silicon photovoltaic cell. | 7 |
| | b) | Explain the working principle of photovoltaic conversion with a neat diagram. | 7 |
| 6. | a) | State the basic components of a wind energy conversion system. List advantages and disadvantages. | 7 |
| | b) | Write performance characteristics of photovoltaic conversion. | 7 |
| 7. | a) | What are the biomass resources? State the limitations of utilizing biomass. | 7 |
| | b) | Explain ocean energy sources. | 7 |
| 8. | | Write a short note on any two . | 14 |
| | i) | Overview of solar economics. | |
| | ii) | Components of nuclear reactor | |
| | iii) | Advantages and applications of biogas. | |
