

M.TECH. Mechanical Engineering Design (CBCS) Sem-III
MED32(C) - Open Elective : Renewable Energy Technology

P. Pages : 1

Time : Three Hours



GUG/W/22/14205

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. Diagrams and Chemical equation should be given wherever necessary.
 5. Illustrate your answers wherever necessary with the help of neat sketches.
 6. Solve **any five** questions.

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| 1. | a) | Discuss the energy scenario in India and factors favouring and against renewable energy sources. | 8 |
| | b) | Discuss the reserves of commercial energy sources. | 6 |
| 2. | a) | Define thermal application and write short note on devices for thermal collection and storage. | 8 |
| | b) | What are the advantages and limitations of renewable energy sources. Explain energy alternatives. | 6 |
| 3. | a) | Discuss the solar radiation outside the earth's atmosphere ? | 6 |
| | b) | Define solar radiation. Write the short note on solar radiation on tilted surface. | 8 |
| 4. | a) | Explain method of solar collection and conversion. | 5 |
| | b) | Why solar air heaters used in renewable energy sources ? Explain concentrating collectors. | 9 |
| 5. | a) | Define photovoltaic conversion ? Write the working principle of photovoltaic conversion with a neat diagram. | 8 |
| | b) | Explain PV thermal collectors ? Write advantages and disadvantages. | 6 |
| 6. | | Describe the various biomass energy conversion systems ? Explain with neat diagram ? | 14 |
| 7. | a) | Discuss economic analysis of solar process in renewable energy systems. | 7 |
| | b) | Discuss cost benefit analysis and its optimization in renewable energy systems. | 7 |
| 8. | | Write note on any two . | 14 |
| | a) | Solar process system. | |
| | b) | Flat plate collectors. | |
| | c) | Nuclear energy in renewable energy. | |
| | d) | Clean development mechanism. | |
