

B.E. Mechanical Engineering Eighth Semester
ME8041 - Elective-III : Unconventional Energy Systems

P. Pages : 2

Time : Three Hours



GUG/W/18/2076

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Answer Q. 1 or Q. 2; Q. 3 or Q. 4; Q. 5 or Q. 6; Q. 7 or Q. 8; Q. 9 or Q. 10.
 3. Due credit will be given to neatness and adequate dimensions.
 4. Assume suitable data wherever necessary.
 5. Illustrate your answers wherever necessary with the help of neat sketches.
 6. Use of slide rule, Logarithmic tables, Steam tables, Mollier's chart, Drawing instruments, Thermodynamic tables for moist air, Psychrometric charts and Refrigeration charts is permitted.

1. a) Explain briefly with neat sketch the working of solar pyranometer. 7
b) Define following terms with line sketch. 6
i) Inclination Angle (Altitude). ii) Surface Azimuth Angle.
c) 'Tilt Factor' explain briefly. 3

OR

2. a) Discuss briefly with sketches the different types of point focus type solar concentrator. 9
b) Explain briefly with neat sketch the working of solar furnace. 7
3. a) Discuss the following terms related to liquid flat plate collector. 9
i) Water heating by thermosiphon process.
ii) Selective surface coating on absorber surface.
iii) Number of glass covers on absorber surface.
b) Explain briefly with neat sketch solar air heaters. 7

OR

4. a) Describe briefly with neat sketch the working of solar photo voltaic electric conversion system. 8
b) Explain briefly with neat sketch the working of solar passive heating system. 8
5. a) Describe briefly the working of floating Drum type Biogas plant. 10
b) Discuss briefly the factors affecting the biogas generation. 6

OR

6. a) Discuss briefly with neat sketch the working of Downdraft type gasifier. 8
b) Discuss the parameters that are consider while designing a biogas plant. 8

7. a) Explain briefly power. Extraction from wind. 8
- b) Discuss briefly with neat sketches the classification of wind energy conversion system. 8

OR

8. a) Discuss briefly with neat sketch Heaving float Type wave machine. 8
- b) Explain briefly with neat sketches the OTEC plants. 8
9. a) Discuss briefly "The Types of Geothermal Energy Resources". 8
- b) Discuss briefly with neat sketch; working of "wet steam high temperature hydrothermal system" for Geothermal energy extraction. 8

OR

10. a) Discuss briefly with neat sketch the working of open cycle MHD generating system. 8
- b) Discuss briefly the Design problems in MHD generation system. 8
