

2123

B.E. (Mechanical Engineering)

Seventh Semester

Elective - I

MEC-705 (c): Renewable Energy Sources

Time allowed: 3 Hours

Max. Marks: 50

NOTE: Attempt five questions in all, including Question No. 1 which is compulsory and selecting two questions from each Part.

x-x-x

1. (a) Define the term "Air mass". What do you understand by AM1 and AM2? 2*5=10
- (b) What do you understand by the term "Collector Efficiency"?
- (c) Differentiate between solar azimuth angle and surface azimuth angle.
- (d) What is solar insolation? How is it different from solar irradiation?
- (e) What kind of information can be extracted from 'Windrose'?

PART A

2. (a) Explain how per capita energy consumption can be considered as a parameter to measure prosperity of a nation. 5
- (b) Explain with a neat sketch, working of Pyrheliometer. 5
3. (a) Discuss the working of compound parabolic solar collector. 5
- (b) With the help of a schematic diagram, explain "Trombe wall passive solar heating system". 5
4. Explain, in detail, state-of-the-art conversion technologies that help to use biomass material efficiently. 10

PART B

5. Describe the working of horizontal axis wind turbine system with a neat and labelled sketch. 10
6. Write short note on the environmental impact of geothermal energy. Discuss the global status vis-à-vis the current status of geothermal energy in India. 10
7. (a) Explain the working of single basin double-effect tidal system. 5
- (b) Distinguish between a 'Tidal power plant' and an OTEC plant with particular reference to Anderson closed-cycle OTEC plant. 5

x-x-x