

Roll No

MEPE - 301(C)
M.E./M.Tech. III Semester
Examination, December 2014

**Non Conventional Energy Sources and Energy
Converters (Elective-I)**
Time : Three Hours

Maximum Marks : 70

Note: Attempt any five questions. All questions carry equal marks. Draw neat diagrams wherever required.

1. a) State the classification of Renewable energy systems.
b) Write technical note on Renewable energy sources in India.
2. a) What do you mean by energy management and energy efficiency?
b) State Betz's criteria. Derive the expression for power development due to wind.
3. a) What are hybrid energy systems? State its various possible combinations.
b) Compare the characteristics of synchronous generator and induction generator.
4. a) How solar radiation measurement is done? Describe the principle of Pyranometer.
b) Discuss the theory of flat-plate solar collector. Draw a neat diagram showing all components. Explain the function of each.

5. a) Compare biochemical, chemical and thermo-chemical routes of biomass conversion.
b) Define biomass gasification. Discuss biomass gasifier with neat sketch.
6. a) State the importance of energy audit. Discuss various types of energy audit instruments.
b) Explain the characteristics of energy efficient motors.
7. a) Discuss some Energy Conservation Techniques in electrical pumps and air-conditioners.
b) Give some important highlights of Energy Conservation Act 2001.
8. Write short note on following: (any two)
 - a) Mini-hydro generators.
 - b) Special generators driven by bio gas engine.
 - c) Futuristic energy converter systems.
