Paper Code: EOE-081	Roll No.									

B.Tech.
(SEM VIII) EVEN SEMESTER EXAMINATION, 2015-16
NON CONVENTIONAL ENERGY RESOURCES

[Time: 3 hrs.] **[Max. Marks: 100]**

Note:- Attempt All Questions. All Questions carry equal marks.

1. Attempt any two of the following:- **[10x2=20]**

(a) Which types of generation of electricity are categorized as non conventional energy resources? On what ground do they differ from conventional methods of electricity generation? What is the status of generation of electricity using non conventional resources in India?
(b) What do you understand by solar irradiation and its types? What is the significance of Solar Azimuth angle, Altitude angle and Zenith angle?
(c) What is a solar cell? How does it work? Which materials are used for making solar cells and why? Draw a labeled schematic diagram to show all the components used in a solar cell power plant.

2. Attempt any two of the following: - **[10x2=20]**

(a) Describe the principle of conversion of solar energy to heat. What are the flat plate solar collectors and their components? How is it optimum inclination decided?
(b) Which materials are used for sensible solar heat storage? Compare them based on their advantages and disadvantages. What are the problems associated with latent heat storage?
(c) How is it possible to realize solar refrigeration and cooling system? Using schematic diagram explain the solar absorption refrigeration system.

3. Attempt any two of the following: - **[10x2=20]**

(a) Discuss various types of geothermal resources. Give the merits and demerits of geothermal energy. What is its potential in India?
(b) Draw schematic diagrams for open cycle and closed cycle MHD generators. Compare their performances.
(c) What is the role of oxidation and reduction in fuel cells? Compare a fuel cell with a primary battery. Describe Hydrogen-Oxygen fuel cell bringing about the principle of operation of fuel cells.

4. Attempt any two questions: - **[10x2=20]**

(a) Discuss about thermoelectric generator. Show that the maximum power output is inversely proportional to the internal resistance.
(b) Derive an expression for the power available in wind. Define solidity, pitch angle, chord, drag and lift force.
(c) Show that the power output of a wind turbine cannot be more than 59.3% of wind energy. What is the status of wind power generation in Indian perspective?

5. Attempt any two of the following: - **[10x2=20]**

(a) Give the principle of operation of Bio gas plants. What is the composition of Bio gas? Name different types of Bio gas plants and describe any one of them using neat diagram.
(b) How electricity is generated using Tides? Explain single basin and double basin types of tidal power plants. Give advantages, disadvantages and environmental impact of tidal plants.
(c) How is thermal energy of ocean converted into electrical energy? Describe the Claude cycle and Anderson cycle deployed in Ocean Thermal Energy Conversion system.