(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 2950 Roll No. | | | | | | | | | | |

# B.Tech.

## (SEM. VIII) THEORY EXAMINATION 2011-12

## NON CONVENTIONAL ENERGY RESOURCES

*Time : 3 Hours* *Total Marks : 100*

**Note :—** (1) Answer **all** questions.

(2) All questions carry equal marks.

1. Attempt any **two** out of the following :— **(10×2=20)**

   (a) What do you mean by non-conventional energy resources ? Discuss briefly.

   (b) What is meant by dry stream, wet stream and hot water geothermal system ?

   (c) Discuss the difference between a geothermal power plant and thermal power plant. Categorise resources of geothermal energy.

2. Attempt any **two** out of the following :— **(10×2=20)**

   (a) Classify solar cells. Derive an expression for maximum power output and efficiency of a solar cell.

   (b) Distinguish between global radiation and diffuse radiation. Describe the procedure for evaluating the performance of a solar collector.

(c) Describe the features and main applications of solar photovoltaic systems.

3. Attempt any **two** out of the following :— **(10×2=20)**

(a) Draw schematic diagram of a MHD power generating system with a heat recovery system. Explain the working of the system.

(b) Explain the difference between a fuel cell and battery. What are the uses and advantages of fuel cells ?

(c) Sketch and explain the functioning of solid oxide fuel cells.

4. Attempt any **two** out of the following :— **(10×2=20)**

(a) Explain the working of thermoelectric generator. Differentiate between thermoelectric and thermionic conversion system.

(b) Describe the basic principle of wind energy conversion and derive the expression for power developed due to wind.

(c) Classify rotors employed for wind generation. Prove that for a propeller type, horizontal axis wind turbine.

5. Attempt any **two** out of the following :— **(10×2=20)**

(a) Describe the bioconversion process for obtaining biofuels.

(b) Draw the schematic diagram of open cycle OTEC system. Also draw the temperature-entropy diagram for it and explain the principle of operation.

(c) State the present status of tidal power plants in India. Why is the tidal energy not being utilized ?