

Printed Pages : 4



EOE081

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

PAPER ID : 199851

Roll No.

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B. Tech.

(SEM. VIII) THEORY EXAMINATION, 2014-15
NON CONVENTIONAL ENERGY RESOURCES

Time : 3 Hours]

[Total Marks : 100

- Note :**
- (1) Attempt all questions.
 - (2) Be precise in your answer.

- 1 Attempt any two parts of the following : $10 \times 2 = 20$
- (a) What are conventional and non-conventional energy resources ? Discuss the prospects of non-conventional energy sources in India.
 - (b) Describe the principle of solar photovoltaic energy conversion. Classify solar cells. What are the materials used in solar cells ? Also discuss the factors that limit the efficiency of the solar cells.
 - (c) What is MNRE ? What are the mission and functions of it ? Define and explain renewable and non-renewable energy resources. Mention at least one energy resources in each category.

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2 Attempt any two parts of the following : $10 \times 2 = 20$

(a) Describe the various methods of solar radiation measurement. How can we measure all (direct, diffuse and global) radiations with the help of Pyranometer ?

(i) Calculate the angle of declination for 5th May of a leap year.

(ii) Calculate the hour angle at the time 8.15 p.m.

(b) With the help of a neat diagram explain the zenith angle and altitude angle in respect of solar radiation analysis.

(c) Discuss the principle of a concentrating solar collector. How it differs with flat plate collector ? How collector coating can be used to improve the performance of collector with reference to the flat plate collector ? What is the concentrating ratio for focusing collector ?

3 Attempt any four parts of the following : $5 \times 4 = 20$

(a) What is geothermal energy ? Discuss different systems used for generating the power using geothermal energy.

(b) Give the principle of MHD power generator. Explain in detail, the closed MHD system.

- (c) How many ways we can store solar energy ?
Explain in brief about thermal energy storage and mechanical energy storage.
- (d) What is fuel cell ? Differentiate between AFC and PEMFC.
- (e) Discuss the difference between a geothermal power plant and thermal power plant. Categories, the various resources of geothermal energy.

4 Attempt any two parts of the following : $10 \times 2 = 20$

- (a) Explain the working of thermoelectric generator.
Differentiate between thermoelectric and thermo-ionic conversion system.
- (b) Describe with a neat sketch, the working of a WECS with main components. What are the main factors to be considered for the selection of a site for wind generators ?
- (c) Briefly describe :
- (i) Seeback effect
 - (ii) Petlier effect

5 Attempt any two parts of the following : $10 \times 2 = 20$

- (a) Explain the basic principle of Ocean Thermal Energy Conversion (OTEC). How can tidal power be utilized for the benefits of mankind ?
- (b) What are tides ? How they are formed ? Discuss the functioning of a tidal power plant.
- (c) Describe the factors that affects the size of biogas plant and the materials used for biogas generation.