(c) Describe the basic principle of ocean thermal energy conversion OTEC. What are the main types of OTEC power plants? Describe their working in brief.

(d) Describe the construction and working of any one type of wave energy conversion machine.

0901

Printed Pages : 4 TOC01

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

PAPER ID : 0901 Roll No.

B.Tech

(SEM VII) ODD SEMESTER THEORY EXAMINATION 2009-10
NON CONVENTIONAL ENARGY RESOURCES

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

Note : *(1) Attempt all questions.*
(2) All questions carry equal marks.
(3) In case of numerical problem assume data wherever not provided.
(4) Be precise in your answer.

1 Attempt any four parts of the following : **5×4=20**

(a) What is meant by Non-Conventional Energy Resources? Explain in brief these energy resources with reference to Indian Context.

(b) Describe the advantages and disadvantages of the Non-conventional energy resources.

(c) Describe the difference between the Direct radiation and Diffuse radiation.

(d) With the help of a neat diagram explain the following in respect of solar radiation analysis :
(i) Solar Azimuth angle
(ii) Altitude angle
(iii) Zenith angle.

(e) Describe the various methods of solar radiation measurement.

(f) Explain the principle of conversion of solar energy into heat.

3 Attempt any two parts of the following : 10×2=20

(a) Describe the various types of identified geo-thermal energy resources and mention its application at different temperature.

(b) Describe the characteristics of the materials used for different components of a power plant utilizing geothermal energy.

(c) Describe the various operational and environmental problems encountered in obtaining the geothermal energy.

(d) By the help of a neat diagram explain the construction, working and characteristics of a vapour dominated geothermal power plant.

4 Attempt any two parts of the following : 10×2=20

(a) What are the various losses associated with the operation of MHD ? Describe the working of a closed cycle MHD generator.

(b) What are the important factors to be considered while selecting materials for an MHD generator? Name the materials and their characteristics for electrodes and generator duct.

(c) Describe the various types of fuel cells. Discuss their advantages, disadvantages and limitations.

(d) Describe the construction, working and principle of a Hydrocarbon Fuel Cell.

4 Attempt any two parts of the following : 10×2=20

(a) What do you understand by the nature of wind ? Describe the factors that affects the nature of wind.

(b) Describe with the help of a neat sketch the construction and working of a WECS (Wind Energy Conversion System).

(c) What are the advantages of vertical axis machines over horizontal type? Describe the construction of a rotor for a relatively low velocity wind.

(d) What do you understand by seeback thermo electric effect? How does seeback coefficients vary with temperatures ?

5 Attempt any two parts of the followings : 10×2=20

(a) How are bio-gas plants classified? Explain them briefly giving their advantages, disadvantages and limitations.

(b) Describe the factors that affect the size of a biogas plant. Describe the materials used for bio-gas generation.