Printed Pages : 2

EME021

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

PAPER ID : 140655

Roll No. | | | | | | | | | | |

B. Tech.

(SEM. VI) THEORY EXAMINATION, 2014-15

NON-CONVENTIONAL ENERGY RESOURCES & UTILIZATION

Time : **2** Hours] [Total Marks : **50**

Note : Each question carries **equal** marks.

1 Attempt any **two** questions : **5×2=10**

a) Discuss the primary and secondary energy sources also describe the future of non-conventional energy sources in India.

b) Discuss in details about reserve and production of petroleum and natural gas in India with problems areas.

c) Explain "Lattitude", "Declination angle" and "Surface azimuth angle".

2 Attempt any **two** questions : **5×2=10**

a) Enumerate the different type of concentrating type collectors.

b) Explain basic Rankine cycle. Distinguish between low temperature and high temperature Rankine cycle.

c) A certain solar cell type has an output capacity of 0.5 Amp and 0.4 Volt. A series/parallel solar array has been designed of such with 100 parallel strings and each string has 300 cell in series. Calculate
   i. Voltage capacity
   ii. Current capacity
   iii. Power output capacity of array.

3 Attempt any **two** questions : **5×2=10**

a) Explain the process of photosynthesis. What are the conditions which are necessary for it.

b) Discuss various designs of rotors with their merits and demerits.

c) Derive the expression for total power of wind stream.

4 Attempt any **two** questions : **5×2=10**

a) Discuss hydrogen-oxygen fuel cell. Show that hydrogen oxygen fuel cell has the maximum efficiency of 83%.

b) Explain the closed cycle system of OTEC plant.

c) Write short notes on "Safety precautions of hydrogen as fuel."

5 Attempt any **two** questions : **5×2=10**

a) Explain the following :
   i. Seeback Effect
   ii. Peltier effect
   iii. Thomson effect.

b) What is wave energy ? How can it be tapped ? Describe a few wave conversion devices.

c) Explain the working of geothermal power plants. Discuss nature and characteristics of Indian geothermal reservoir.
