

Code No: **R41027**

R10

Set No. 1

IV B.Tech I Semester Supplementary Examinations, February/March - 2018

NON CONVENTIONAL SOURCES OF ENERGY

(Open Elective)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 a) Explain the terms angle of latitude, Declination angle and Hour angle With respect to solar radiation. [8]
b) Calculate the number of day light hours in Srinagar for 1 January and 1 July. Take latitude of Srinagar as $34^{\circ} 05'$ North. [7]
- 2 Derive the expression for the angle of incidence for an inclined surface? Find the angle of incidence when (i) tilt angle = 0° (ii) tilt angle = 90° (iii) Surface azimuth angle = 0° . [15]
- 3 a) Explain the necessity of Solar energy storage and how it is useful in present energy scenario [8]
b) Explain the process of Solar distillation along with its usage. [7]
- 4 a) Explain the basic principle of wind energy conversion. [7]
b) Derive the expression for power developed due to wind. [8]
- 5 a) Explain Aerobic and Anaerobic Processes. [8]
b) What are the factors considered while locating a biogas plant? [7]
- 6 a) Enumerate the merits and demerits of geothermal energy. [7]
b) List the environmental problems caused by geothermal energy. [4]
c) List the geothermal resources potential in India? [4]
- 7 a) Explain the merits and demerits of OTEC (Ocean Thermal Energy conversion) Plant. [8]
b) Explain the different modes of operation of a tidal power plant. [7]
- 8 Write Short notes on the following:
a) Carnot Cycle
b) Mini – hydel Power plants
c) Fuel cells and its operating conditions [15]