

Code No: **R41033**

R10

Set No. 1

IV B.Tech I Semester Supplementary Examinations, Oct/Nov - 2018

ALTERNATIVE SOURCES OF ENERGY

(Mechanical Engineering)

Time: 3 hours**Max. Marks: 75**

Answer any FIVE Questions

All Questions carry equal marks

- 1 a) Estimate the rate at which the sun emits energy. What fraction of this energy is intercepted by the earth and what is the amount intercepted? [7]
b) Derive the expression to evaluate solar radiation fall on tilted surface. [8]
- 2 a) What are the main components of a flat-plate solar collector, explain the function of each. [8]
b) How are concentrated collectors classified? Explain the working of any one concentrated collector. [7]
- 3 a) Explain the concept of central power tower and solar chimney. [8]
b) What are the main applications of a solar pond? Describe briefly. [7]
- 4 a) Discuss the importance of site selection in wind power generation? [8]
b) Explain the function of each component used in horizontal axis wind turbine. [7]
- 5 a) Mention biomass conversion processes and brief about direct combustion and thermo chemical conversion. [8]
b) What are the modifications required for IC Engine to use biogas as fuel? Discuss its economic aspects. [7]
- 6 a) Explain geothermal energy potential in India. [8]
b) Explain the methods for harnessing geothermal energy. [7]
- 7 a) Explain the various methods of tidal power generation. What are the limitations of each method? [8]
b) Write types of OTEC plants explain any one type with neat sketch. [7]
- 8 a) Explain the working of fuel cell and discuss its economic aspects. [8]
b) What is magneto-hydro-dynamic generation? Explain basic principle of operation of such a generator. [7]