Code No: **R41033** **R10** **Set No. 1**

IV B.Tech I Semester Supplementary Examinations, March/April - 2016

ALTERNATIVE SOURCES OF ENERGY

(Mechanical Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks
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1 a) Write notes on beam and diffuse radiation. [8]
b) Derive an expression for the daily extraterrestrial radiation which would fall on a surface having a slope β and facing due south (i.e., $\gamma=0^0$). [7]

2 a) What materials are used for concentrator and why? [7]
b) Why orientation is needed in concentrating type collectors? Describe the different methods of sun tracking. [8]

3 a) Describe in brief, the different energy storage methods used in the solar system. [7]
b) Write short notes on:
i) Solar chimney power plant ii) Solar thermal storage [8]

4 a) What is the importance of site selection in wind power generation? [7]
b) Explain the momentum theory in wind power generation. Give the classification of rotor used for wind generation. [8]

5 a) How bio-energy may be useful for rural applications. Justify your answer. [8]
b) Explain the production of bio-gas. [7]

6 a) What is geo-pressure deposit? [5]
b) How can geothermal energy be utilized for electricity generation? [5]
c) What are the possible sources of geothermal pollution? How these are avoided? [5]

7 a) Explain the various methods of tidal power generation. What are the limitations of each method? [8]
b) What are the advantages and limitations of wave energy conversion? [7]

8 a) Draw schematic diagram of an MHD power generating system having heat recovery steam generator. Explain the functioning of the system. [7]
b) What is magneto-hydro-dynamic generation? Explain basic principle of operation of such a generator. [8]