Code No: 58020 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year II Semester Examinations, May - 2016
RENEWABLE ENERGY SOURCES
(Common to ME, AME, MSNT)

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

Answer any Five Questions
All Questions Carry Equal Marks

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1.a) What are the prospects of non-conventional energy sources in India? Explain.
b) Define solar irradiance and solar constant. [8+7]

2.a) Draw the configuration of different types of concentrating collectors and discuss their advantages and disadvantages.
b) Define concentration ratio of a solar collector. [8+7]

3.a) Explain the principle of conversion of solar energy into heat.
b) Describe the classification of solar cells based materials used. [7+8]

4.a) Draw a neat diagram of a horizontal shaft wind mill with required components and explain the function of each component.
b) Describe the main applications of wind energy. [9+6]

5.a) What is the difference between biogas and bio mass? Explain briefly.
b) The following data is given for a family biogas digester suitable for the output of five cows the retention time is 20 days, temperature 30^0c, dry matter consumed per day = 2kg, biogas yield is 0.24 kg m^3 per kg the efficiency of burner is 60%, methane proportion is 0.8. Heat of combustion of methane = 28MJ/m^3. Calculate (i) The volume of biogas digester (ii) the Power available from biogas digester. [6+9]

6.a) What do you understand by Geothermal energy?
b) Explain various methods of harnessing the energy. [7+8]

7.a) Explain with neat sketches the various methods of tidal power generation. What are the limitations of each method?
b) Explain the working of Anderson cycle OTEC system with neat sketch. [8+7]

8.a) What is Joule Thomson Effect? Explain.
b) Explain important factors to be considered for selecting materials for MHD generator. [7+8]

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