G-6

B. Tech. EXAMINATION, Dec. 2018

(Seventh Semester)

(B. Scheme) (Main & Re-appear)

(Common for all Branches)

EEE457B

ENERGY RESOURCES AND TECHNOLOGY

Time : 3 *Hours*] [*Maximum Marks :* 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit IV

7. (a) What are the different forms of biomass available as biofuels ? **7**

(b) Describe in detail the various models of biogas plants. **8**

8. (a) What do you understand by energy plantation ? **6**

(b) Explain the three aerobic and anaeriobic bio-conversion processes for the biomass energy applications. **9**

Unit I

1. (a) Discuss the possibility of exploiting the non-conventional energy in India. **7**

(b) What is the potential of geothermal resources in India ? **3**

(c) What do you understand by greenhouse effect ? **5**

2. (a) Give a comparative study of thermal, hydro, nucler and gas power plants. **7**

(b) With the help of schematic diagram explain the working of closed OTEC cycle power plant. **8**

Unit II

3. (a) Explain the principle of conversion of solar energy to heat. Explain fixed mirror solar concentrator. **10**

(b) Describe a solar cooling system based on vapour compression system. **5**

4. (a) Derive an expression for solar day length. Calculate the number of daylight hours in Srinagar for 1st January and 1st July. Take latitude of Srinagar as 34º05′ N. **10**

(b) With the help of schematic diagram explain the working of solar water heater. **5**

Unit III

5. (a) What do you understand by the behaviour and structure of wind ? **5**

(b) Describe horizontal axis type aerogenerator. Give advantages of vertical axis windmill over horizontal type. **10**

6. (a) Derive an expression for the total power of a wind stream. **8**

(b) Find the maximum power output of a turbine if wind speed = 8 m/s, air density = 1.2 kg/m^3 and rotor diameter = 60 m. **7**