

Code: EE8T1

**IV B.Tech - II Semester –Regular / Supplementary Examinations
July - 2021**

**RENEWABLE SOURCES OF ENERGY
(ELECTRICAL AND ELECTRONICS ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

PART – A

Answer *all* the questions. All questions carry equal marks
11x 2 = 22 M

1.
 - a) Define tilt angle and declination angle.
 - b) Define reflected radiation and total radiation.
 - c) What is the difference between renewable and convention energy sources?
 - d) List out the instruments for measuring solar radiation.
 - e) Define PV module and PV array.
 - f) Define tip speed ratio.
 - g) List out the various bio gas digesters.
 - h) Write short notes of thermodynamic cycle.
 - i) Define tidal range.
 - j) What is the DEC system?
 - k) Explain working of small hydro stations.

PART – B

Answer any **THREE** questions. All questions carry equal marks. 3 x 16 = 48 M

2. a) Calculate the average daily global radiation at Nagpur with following data i) theoretical maximum possible sunshine 9.5hours ii) average measured length of a day during April 9.0 hours iii) solar radiation for a clear day, $H_0 = 2100 \text{ kJ/m}^2/\text{day}$. 4 M
- b) Classify Pyrheliometes and explain with neat sketch 12 M
3. a) Write short notes on various solar thermal energy storage systems. 8 M
- b) Explain the applications of standalone PV system with neat Sketch. 8 M
4. a) Derive the expression for maximum power coefficient ($C_p=0.59$). 8 M
- b) Explain the process of photosynthesis. List out comparison of floating drum and fixed dome type plants 8 M

5. a) Explain single and double flash wet steam systems with neat sketch. 8 M
- b) Explain working of heaving and pitching float type devices with neat sketch. 8 M
6. a) Explain working principle of MHD generation system with neat diagram. 8 M
- b) Write short notes on fuel cells. 8 M