U.S.N.										

B. M. S. College of Engineering, Bengaluru - 560019

Autonomous Institute Affiliated to VTU

September / October 2023 Supplementary Examinations

Programme: B.E. **Semester: VII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 19CH7OEAET **Max Marks: 100**
Course: Advances in Energy Technology

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may be suitably assumed.

UNIT - I

1. a) What is the need for alternate energy? List the energy alternatives available. **10**
   b) Describe the impact of energy on society and environment. **10**

UNIT - II

2. a) Define solar constant. Give the reason for averaging the value of solar constant. Write the equation used to calculate the intensity of solar radiation I. **10**
   b) Determine the local solar time and declination at a location latitude of $23°15'N$ and longitude $77°30'E$ at $12:30\ IST$ on June 19. Equation of time correction is $-1'01''$. Consider the standard time longitude as $82°30'$. **10**

UNIT - III

3. a) Classify the earth's surface into groups based on the nature of geothermal fields. **10**
   b) Which are the five general categories of geothermal resources? **10**

OR

4. a) Briefly describe any four factors that affect bio-digestion or generation of gas. **08**
   b) With the help of a neat sketch describe any one type of biogas plant. **12**

UNIT - IV

5. a) Discuss the basis for classification of wind energy conversion systems? **08**
   b) With the help of a sketch describe the working of an axial – horizontal wind energy collector. **12**

OR

6. a) Narrate the principle of tidal power generation. **10**

   b) With the help of a schematic diagram, explain the working of a tidal power house. **10**

UNIT - V

7. a) With the help of a neat sketch and the reactions, describe the working principle of a fuel cell. **10**

   b) List the various applications of fuel cells. **10**

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