U.S.N.										

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

Autonomous Institute Affiliated to VTU

February / March 2023 Semester End Main Examinations

Programme: B.E. **Semester: VII**
Branch: Institutional Elective **Duration: 3 hrs.**
Course Code: 19CH7OEAET **Max Marks: 100**
Course: Advances in Energy Technology **Date: 22.02.2023**

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

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - I

1	a)	Discuss the major energy sources and their availability.	**10**
	b)	Outline the need for alternate energy and brief on the available alternate energy resources.	**10**

UNIT - II

2	a)	Explain the terms. i) Solar constant ii) Direct radiation iii) Diffuse radiation iv) Zenith angle v) Surface Azimuth angle.	**05**
	b)	Discuss the principle of conversion of solar radiation in to heat.	**05**
	c)	Describe any one solar radiation collector with a neat diagram. Enlist the different types of solar radiation collectors.	**10**

UNIT - III

3	a)	Discuss in detail the biological process of biogas production and the factors affecting biogas generation.	**12**
	b)	Compare anaerobic digestion with aerobic digestion. List the advantages of anaerobic digestion.	**08**

OR

4	a)	What are the various geothermal resources? Elaborate.	**12**
	b)	Enumerate the key applications of hot water and steam generated from wet geothermal reservoirs.	**08**

UNIT - IV

5	a)	Enlist the factors that influence the output of wind energy converter. Explain briefly.	**08**
	b)	Describe the primary components of a typical wind energy conversion system.	**12**

OR

6	a)	Describe the types of turbines used for small scale hydro electricity generation.	**12**
	b)	Enlist the advantages of small hydropower systems.	**08**

UNIT - V

7	a)	Present the classification of fuel cells in detail.	**08**
	b)	Explain in detail the ion exchange membrane cell.	**12**

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