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

Autonomous Institute Affiliated to VTU

August 2024 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 are the drawbacks of fossil fuels? Explain why non-conventional energy resources should be prioritized in India.	**10**
	b)	Define energy resources and categorize them based on usability, traditional use and long-term availability. Give examples for each category.	**10**

UNIT - II

2	a)	Define solar constant, extra-terrestrial radiation and terrestrial radiation.	**06**
	b)	Explain the reasons for variation in solar radiation reaching the earth and that received by the outer layer of the atmosphere?	**04**
	c)	Differentiate between concentrating and non-concentrating type solar collectors.	**04**
	d)	Explain the working of a cylindrical parabolic type concentrator with a neat sketch.	**06**

UNIT - III

3	a)	Discuss the advantages and disadvantages of a floating drum plant.	**04**
	b)	What are the different reaction zones observed in an updraft type gasifier and how would you explain each one?	**08**
	c)	Describe a binary cycle power generation system for the production of electricity with a neat sketch.	**08**

OR

4	a)	Explain the refuse derived fuels (RDF) process for waste energy recovery along with a neat sketch.	**10**

b) Elucidate the following: **10**

(i) Disadvantages of geothermal energy

(ii) Advantages of geothermal energy and

(iii) Ethanol production from sugarcane.

UNIT - IV

5 a) Describe the working of a wind power system with the functions of its main components and a neat sketch. **08**

b) What are the advantages of horizontal and vertical axis wind turbines? **04**

c) Discuss the different types of turbines used in a hydropower plant with neat sketch. **08**

OR

6 a) Illustrate the construction and working of small hydropower plant station with a neat sketch. **10**

b) Discuss the criteria for selecting the site for a hydropower plant. **06**

c) What are the advantages and limitations of hydroelectric power generation? **04**

UNIT - V

7 a) What is a fuel cell? Describe the construction and principle of working of a fuel cell with reference to H_2-O_2 cell. **12**

b) Discuss advantages and disadvantages of fuel cell. List its applications. **08**

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