U.S.N.										

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

Autonomous Institute Affiliated to VTU

September / October 2023 Semester End Main Examinations

Programme: B.E. **Semester: I / II**
Branch: Common to all Branches **Duration: 3 hrs.**
Course Code: 22EE1ESRES / 22EE2ESRES **Max Marks: 100**
Course: RENEWABLE ENERGY SOURCES

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.

B.M.S.C.E - EVEN SEM 2022-23

UNIT - I

1	a)	List the advantages and disadvantages of renewable energy sources (Four each).	**04**
	b)	With a neat block diagram explain the conversion of solar energy to electrical energy	**08**
	c)	With a neat block diagram explain the conversion of wind energy to electrical energy	**08**

UNIT - II

2	a)	Define the following terms (i) beam radiation (ii) diffuse radiation (iii) global radiation and (iv) scattering of the incident radiation.	**04**
	b)	With a neat sketch define the following terms (i) declination angle, (ii) hour angle, (iii) angle of incidence and (iv) slope	**08**
	c)	With a neat sketch explain the construction and working principle of solar PV cell with its I-V characteristics	**08**

OR

3	a)	Determine the declination angle and hour angle on April 12 , 2023 at 2.00PM	**04**
	b)	Draw the neat sketch of (i) flat plate collector and (ii) parabolic trough	**08**
	c)	Explain with a neat diagram the construction and working of pyrheliometer	**08**

UNIT - III

4	a)	How wind turbines are classified?	**04**
	b)	With neat sketch explain the working of Savonius type vertical axis wind turbine	**06**
	c)	With a neat sketch explain the construction and working of three blade horizontal axis wind turbine.	**10**

OR

5	a)	List the advantages of wind energy system (Any four)	**04**
	b)	With neat sketch explain the working of Darrieus type vertical axis wind turbine	**06**
	c)	Derive the condition for maximum power extraction by the wind turbine from the total available wind energy	**10**

UNIT - IV

6	a)	With a neat sketch explain the all three methods of generation of power that can achieved in single basin arrangement.	**10**
	b)	With a neat schematic explain the construction and working of closed cycle ocean thermal energy conversion system.	**10**

UNIT - V

7	a)	With a neat schematic explain the construction and working of fixed dome biogas plant	**10**
	b)	With a neat sketch and relevant reactions explain the construction and working of Phosphoric Acid Fuel Cell (PAFC).	**10**

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