Q. Code:700139

Reg. No. | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATION, MAY 2023

Sixth Semester

OE18606 – RENEWABLE ENERGY SYSTEMS

(Common to all branches except EEE)

(Regulation 2018)

TIME: 3 HOURS **MAX. MARKS: 100**

CO 1 Acquire knowledge on variety of issues in harnessing renewable Energy.

CO 2 Analyze the current and possible future role of renewable energy sources.

CO 3 Select renewable energy resources and technologies for applications.

CO 4 Identify the impact of energy sources on environment.

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	List out the types of renewable energy sources.	**1**	**1**
2.	Define energy efficiency.	**1**	**2**
3.	Mention the factors which determine the power contained in wind.	**2**	**2**
4.	State the different types of wind power plants.	**2**	**1**
5.	Differentiate between beam and diffuse radiation.	**2**	**2**
6.	Why the efficiency of solar thermal power generation is lesser than other systems?	**2**	**2**
7.	What is biomass cogeneration?	**3**	**2**
8.	Mention the various factors considered in designing a micro hydel scheme.	**3**	**2**
9.	Why hydrogen is considered as a secondary energy source?	**4**	**2**
10.	What are primary and secondary fuel cells?	**4**	**1**

PART- B (5 x 14 = 70 Marks)

			Marks	CO	RBT LEVEL
11. (a)		Describe the fossil fuels as the conventional energy sources. What are the conventional and non-conventional energy sources?	**(14)**	**1**	**3**
		(OR)			
(b)	**(i)**	Discuss the present status of world energy scenario.	**(07)**	**1**	**3**
	(ii)	Criticize the energy planning issues aiming to bridge the gap between the energy demand and supply situation in India.	**(07)**	**1**	**3**
12. (a)		Illustrate the process with necessary diagrams, how energy from wind can be extracted?	**(14)**	**2**	**4**

(OR)

(b)	**(i)**	Discuss the various considerations taken into account for site selection of a wind energy system.	**(07)**	**2**	**4**
	(ii)	Examine the working of grid tied wind energy conversion systems with neat diagram.	**(07)**	**2**	**4**
13. (a)		With the help of neat schematic diagram, explain the working of solar photovoltaic systems.	**(14)**	**2**	**3**
		(OR)			
(b)		Implement the algorithm for maximum power point tracking of solar cells in photovoltaic system.	**(14)**	**2**	**3**
14. (a)		Explain the various components of biogas plant. Also Explain the working of floating drum type biogas plant.	**(14)**	**3**	**2**
		(OR)			
(b)		What is geothermal energy? Explain briefly the working principle of a geothermal power plant with neat sketch.	**(14)**	**3**	**2**
15. (a)		Discuss the theory and principle of operation of ocean thermal energy conversion system.	**(14)**	**4**	**3**
		(OR)			
(b)		Examine the working of tidal power plant with neat layout and specify the site requirements.	**(14)**	**4**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	The hydrogen-oxygen fuel cell operates at 25°C. Evaluate the voltage output of the cell, the efficiency and the electric work output per mole of H_2 consumed and per mole of H_2O produced. Given ΔH^0 298°K = -285838 kJ/kg mole ΔG^0 298°K = -237191 kJ/kg mole	**(10)**	**4**	**5**

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