Hall Ticket Number :										

R-15

Code: 5G583

IV B.Tech. II Semester Supplementary Examinations January 2022

Non Conventional Sources of Energy

(Mechanical Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *all five* units by choosing one question from each unit (5 x 14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Explain the role and potential of new and renewable energy sources in the present scenario	7M	1	2
	b)	What advantages do solar energy have when compared to other renewable sources	7M	2	1
		OR			
2.	a)	Define solar irradiance& solar constant. What is the standard value of solar constant	7M	2	1
	b)	Explain the construction and principle of operation of any one solar radiation measuring instrument.	7M	2	2
		UNIT–II			
3.	a)	Explain the working and constructional details of solar flat plate collector	7M	2	2
	b)	What are the main advantages of flat plate collector?	7M	2	1
		OR			
4.		Describe the principle of solar photovoltaic energy conversion and write the advantages and disadvantages of solar PV system	14M	2	1
		UNIT–III			
5.	a)	Explain the working and constructional details of horizontal axis wind turbine with the help of neat sketch	7M	3	2
	b)	What are the advantages of horizontal axis wind turbine over vertical axis wind turbine?	7M	3	1
		OR			
6.	a)	With neat sketch explain the gasification process of biomass using a downdraft gasification plant	7M	4	2
	b)	What are the raw materials and their properties required for producing biogas from biomass	7M	4	1
		UNIT–IV			
7.	a)	What are the requirements and practical considerations for establishing OTEC plant?	7M	5	1
	b)	Explain the working of any one ocean tidal energy conversion technology	7M	5	2
		OR			
8.	a)	Explain the method of harnessing hydrothermal geothermal energy resource using figures	7M	5	2
	b)	What are the environmental impacts of geothermal energy?	7M	5	1
		UNIT–V			
9.	a)	Explain the working of MHD generator with a neat sketch	7M	6	2
	b)	Explain the principle and working of fuel cells	7M	6	2
10.		Describe the basic principle of operation of an MHD generator. Derive expressions for maximum power generation per unit volume of a generator	14M	6	1

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