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Reg. No.							

Question Paper Code

11798

B.E./B.Tech. - DEGREE EXAMINATIONS, APRIL/MAY 2023

Seventh Semester

Mechanical Engineering ME8072 – RENEWABLE SOURCES OF ENERGY

(Regulations 2017)

Duration: 3 Hours

Max. Marks: 100

Answer ALL Questions

$PART - A (10 \times 2 = 20 Marks)$

		Marks, K-Level,CO
1.	Differentiate renewable and non-renewable energy.	2,K1,CO1
2.	List out few fossil fuels.	2,K1,CO1
3.	Write a short note on Tyndall effect.	2,K1,CO2
4.	Define Hour Angle.	2,K1,CO2
5.	Write any two types of wind turbine power plant.	2,K1,CO4
6.	Explain the terms used to define Tip speed ratio.	2,K2,CO3
7.	Define Cogeneration.	2,K1,CO4
8.	Establish aerobic and anaerobic process.	2,K2,CO5
9.	Write the advantages of Fuel cell.	2,K1,CO6
10.	Explain Geothermal energy.	2,K2,CO6

PART - B $(5 \times 13 = 65 \text{ marks})$

Answer ALL Questions

- 11. a) Describe the following:
 - (i) Applications of renewable sources of energy.(ii) Terms used in renewable energy cost analysis.

7,K2,CO1

energy cost analysis.

OR

6,K2,CO1

- b) Discuss the following:
 - (i) World renewable energy reserves.

8,K2,CO1

- (ii) Initiatives taken by the Tamilnadu government towards the 5,K2,C01 development of renewable sources of energy.
- 12. a) Explain the different types of solar energy collectors with neat 13,K2,CO2 diagrams.

OR

b) Classify and explain the types of instruments for measuring solar 13,K2,CO2 radiation.

K1 - Remember; K2 - Understand; K3 - Apply; K4 - Analyze; K5 - Evaluate; K6 - Create

11798

13.	a)	Explain the following controls in wind turbine	
		(i) Yaw control	4,K3,CO4
		(ii) Pitch control	5,K3,CO4
		(iii) Teethering control	4,K3,CO4
		OR	
	b)	(i) Sketch the various types of blades in the wind turbine.	7,K3,CO4
		(ii) Write the essential features of a probable site for a wind farm.	6,K3,CO4
14.	۵)	Evenlain halous his alous in 11:	
14.	a)	Explain below bio-chemical biomass conversion process	6 V2 CO1
		(i) Anerobic digestion.	6,K3,CO4 7,K3,CO4
		(ii) Fermentation process.	7,N3,CO4
		OR	
	b)	Explain about Updraft and Down draft gasifiers.	13,K3,CO5
15.	a)	Explain the following:	
	,	(i) OTEC open cycle.	7,K3,CO6
		(ii) OTEC closed (Anderson) cycle.	6,K3,CO6
		OR	0,113,000
	b)	Sketch a schematic and show the liquid dominated and vapor	12 12 005
T.	-,	dominated geo-thermal energy harvesting process.	13,K3,CO5
		$PART - C (1 \times 15 = 15 Marks)$	

16. a) Examine the steady flow energy equation for wind turbine to obtain 15,K3,C03 maximum power of a wind turbine for given incoming velocity.

OR

b) Explain how the biogas contributing to overall available renewable 15,K3,C05 energy source? Explain about the stages in methane gas production process.