Reg. No.:

Question Paper Code: U9776

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

Open elective

21UME976 RENEWABLE ENERGY TECHNOLOGIES

		(Common to All Eng	gineering branches)				
		(Regulatio	ns 2019)				
Dura	ation: Three hours		Maximum: 100 Marks				
		Answer ALL	Questions				
		PART A - (10 x	1 = 10 Marks)				
1.	The world average tonnes of co	CO1 U					
	(a) 3	(b) 2.2	(c) 4.5	(d) 1.0			
2.	CO1 U						
	(a)USA	(b) Russia	(c) India	(d)China			
3.	What technology systems with the		oly by integrating solar PV	CO1 U			
(a) Inverter (b) Charg		(b) Charge Controller	(c) Battery	(d)Transformer			
4.	What device is commonly used for measuring solar radiation intensity at the Earth's surface						
	(a) Anemometer	(b) Pyranometer	(c)Barometer	(d) Luxmeter			
5.	Which of the following are the components of horizontal type wind turbine?						
	(a) Break	(b)Gears	(c)AC generators	(d) All the above			
6.	The turbine used t	CO1 U					
	(a) Steam turbine		(b)Aeroturbine				
	(c)Kaplan turbine		(d) Reaction turbine				
7.	The aerobic diges	CO1 U					
	(a) Biomass	(b)Bio-fuels	(c)Synthetic fuels	(d) Metal articles			

8.	The carbon dioxide content of bio methane is						CO1 U	
	(a) 30-40 (b) 55-60		(c) 32-43	(c) 32-43				
9.	Wha	at is the prima	ry source of heat for g	eothermal energy Genera	tion?	(CO1 U	
	(a) Solar radiation		(b) Fossil fuels					
	(c) Nuclear fusion		(d) Earth's interior h	neat				
10.	Whi	ich of the turb	ine can be mounted ve	ertically and horizontally?		(CO1 U	
	(a) Pelton wheel (b) Kaplan turbine			(c) Gorlov turbine	(c) Gorlov turbine (d) Francis turbine			
			PART – B	$(5 \times 2 = 10 \text{ Marks})$				
11.	Def	efine Final Energy Consumption.						
12.	List	out the key co	CO	2- U				
13.	Stat	tate the environmental benefits of wind energy compared to fossil fuels.						
14.	Def	Define biodiesel, and how is it different from ethanol?					CO4- U	
15.	Mer	tion the different working fluid in geothermal power plants?			CO5- U			
			PART –	C (5 x 16= 80 Marks)				
16.	(a)	-	-	cts of traditional cooking petroleum gas) used in		CO 1-App	(16)	
			Or					
	(b)	_	its geographical loca	ystem for a remote v tion and energy requirer	-	CO 1-App	(16)	
17.	(a)	-	neating system with r	of Flat Plate Collectors neat diagram and also d		CO2 - App	(16)	
	(b)		d working process of	vapour absorption solar conhe applications and advan	•	CO2 - App	(16)	
18.	(a)		~ ~	darrieus wind turbine wit		CO3 - U	(16)	
	(b)	-	working process of process and onshore wind	rocess of electricity gene l farms, advantages, appli		CO3 - U	(16)	

19. (a) Explain the fundamental workings of fixed dome type digester CO4 - U biogas plant with neat sketch, application, advantages and disadvantages.

Or

- (b) Explain the working process of sugarcane-based ethanol CO4 U (16) production and its advantages, disadvantages, and potential applications.
- 20. (a) Discuss the importance of tidal range and the difference between CO5 U ebb and flood tides in power generation with a neat diagram ,its advantages and disadvantages

Or

(b) Explain the operational principles of a geothermal energy plant CO5 - U employing the Binary Cycle System applications, advantages, and potential disadvantages.