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GUJARAT TECHNOLOGICAL UNIVERSITY M. E. - SEMESTER - I • EXAMINATION - WINTER • 2014

Sub	ject	code: 713907N	Pate: 04-12-2014
Sub	ject	Name: Renewable Energy System	
Tim	Гіme: 10:30 am - 01:00 pm		Total Marks: 70
Instructions:			
	2.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q1	A] B]	Discuss various methods of using Solar Energy Explain the mechanism of winds	[7 [7
Q2	A] B]	Derive an expression for energy available in the wind Wind at 1.0325 bar and 30°C has a velocity of 14 m/s. calculate: a) Total power density in the wind stream b) The maximum obtainable power density. c) The Obtainable power density at 42% efficiency d) The total power e) The torque and axial thrust. Take: turbine diameter = 10 m, operating speed=60 r.p.m at maximum efficiency Propeller type wind turbine is considered.	
	B]	Calculate Sun's altitude and azimuth angle, hour of sunrise 2:00 pm IST on Jun 8 th , at latitude 23°2' N, longitude correction as 1'15"	· · · · · · · · · · · · · · · · · · ·
Q3	A]	Sketch the diagram of a HAWT, and explain the functions o	f its main components. [7
	B]	With the help of a diagram, a) discuss the power versus we of a wind turbine b) discuss C_p versus to tip speed ratio diagram, \mathbf{OR}	-
Q3	A] B]	_	[7 [7
Q4	A] B]	Compare Floating drum and Fixed dome type biogas plants Explain the mechanism of photoconduction in a PhotoVoltai OR	c cell. [7
Q4	A]	What is biomass? What is the difference between biogas and should be adopted as a source of energy in a country like Inc.	
F	B]	- · · · · · · · · · · · · · · · · · · ·	
Q5	A]	What do you understand by geothermal energy? What are What are the major applications of geothermal energy?	the geothermal fields? [7
	B]	Compare the single basin and double basin tidal power plant OR	s with figures. [7
Q5	A] B]	Explain scope of Renewable Energies in Gujarat Explain Aerobic and anaerobic bioconversion processes	[7 [7
