Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME - SEMESTER–IV • EXAMINATION – SUMMER 2013

Subject Code: 742101 **Date: 14-05-2013**

Subject Name: Non-conventional Energy Conversion System

Time: 10.30 am - 01.00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Recent trends in direct energy conversion systems.	**07**
	(b)	Write a short note on Photo voltaic cells.	**07**
Q.2	**(a)**	Explain classification, advantages and disadvantages of different WECS.	**07**
	(b)	Explain principle of MHD power generation with advantages and disadvantages of MHD plants.	**07**
		OR	
	(b)	Explain detailed analysis of MHD generation.	**07**
Q.3	**(a)**	Write a short note on Pyranometer.	**07**
	(b)	Define the following terms with necessary figure: a. Solar Altitude Angle b. Solar Zenith Angle c. Solar Azimuth Angle d. Declination Angle e. Latitude Angle	**07**
		OR	
Q.3	**(a)**	Explain the term “Solar Constant”. Distinguish between Beam Radiation & Diffuse Radiation. What do you mean by Global Radiation?	**07**
	(b)	Explain Thermal analysis of flat plate collectors and useful design considerations of flat plate collectors.	**07**
Q.4	**(a)**	Derive an expression for maximum power, maximum torque and maximum axial thrust available from a wind turbine from basic principles.	**07**
	(b)	Explain factors affecting biogas generation.	**07**
		OR	
Q.4	**(a)**	Explain Floating drum bio gas plant and compare it with fixed dome type Bio gas plant.	**07**
	(b)	Explain analysis of aerodynamics forces acting on blades.	**07**
Q.5	**(a)**	Explain principle of operation and design consideration of fuel cells.	**07**
	(b)	Discuss the scope of Renewable energy utilization in India.	**07**
		OR	
Q.5	**(a)**	Explain Application, advantages and disadvantages of biological conversion of solar energy.	**07**
	(b)	Explain hydrogen as alternative fuel for vehicles.	**07**

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