Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B. E. Sem - IV Examination June- 2011

Subject code: 140904

Subject Name: ENERGY SYSTEMS

Date:13/06/2011 **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)**	Compare steam, hydro, gas and diesel power plants on basis of site, initial cost, fuel cost, maintenance, water requirement, reliability, etc.	**07**
	(b)	Classify different types of nuclear reactors.	**07**
Q.2	**(a)**	How site for hydro electric plant is chosen?	**07**
	(b)	Atmospheric air having the wind velocity of 22 m/s has the density of 1.22 kg/m^3 at high altitude where the wind mill is installed. The rotor diameter is 18 m and runs at 75 rpm. The actual efficiency of mill is 37%. Find the actual power produced and the maximum torque and axial thrust on turbine shaft.	**07**
		OR	
	(b)	Explain various factors to be consider while designing biogas gasifire.	**07**
Q.3	**(a)**	Describe : In plant handling of coal.	**07**
	(b)	Define following with diagram for solar – earth system • Solar azimuth angle • Zenith angle • Declination angle • Hour angle • Angle of incidence.	**07**
		OR	
Q.3	**(a)**	Give advantages of closed cycle gas turbine power plant over open cycle gas turbine plant.	**07**
	(b)	Distinguish between Beam and Diffuse radiation. What do you mean by Global radiation?	**07**
Q.4	**(a)**	Discuss the grid connected wind energy conversion system with help of schematic diagram.	**07**
	(b)	Explain solar photovoltaic system and also explain its use in solar pumping.	**07**
		OR	
Q.4	**(a)**	Explain effects of wind speed on grid conditions with grid connected wind power systems.	**07**
	(b)	Explain : Solar drying system	**07**
Q.5	**(a)**	Explain schematic arrangement of diesel electric power plant.	**07**
	(b)	What is principle of operation of fuel cell? Classify fuel cells.	**07**
		OR	
Q.5	**(a)**	Explain various factors to be consider while designing biogas gasifire.	**07**
	(b)	With diagram explain working of open cycle OTEC systems.	**07**

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