Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– VI • EXAMINATION – SUMMER 2015

Subject Code: 163703 **Date:14/05/2015**

Subject Name: Energy and Environment

Time: 10.30AM-01.00PM **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)**	What are the different modes of Heat Transfer? Explain any one in detail.	**07**
	(b)	What is Geothermal Gradient? Recognize various Environmental Impacts of Geothermal Power Plant.	**07**
Q.2	**(a)**	Associate Solar PV systems with Solar Thermal systems.	**07**
	(b)	Illustrate the scope for Nuclear Energy systems in India.	**07**
		OR	
	(b)	Explain various methods of converting Energy from Oceans.	**07**
Q.3	**(a)**	Discuss different forms of Fossil Fuels Energy Resources. Write a short note on Indian Coal.	**07**
	(b)	Elucidate Nuclear Fission as a chain reaction with the help of a sketch.	**07**
		OR	
Q.3	**(a)**	What are the advantages and disadvantages of a fuel cell? State the Principal of Fuel Cell.	**07**
	(b)	Simulate the principle of Ocean Thermal Energy Conversion (OTEC).	**07**
Q.4	**(a)**	Recognize Merits and Demerits of Solar PV Systems.	**07**
	(b)	What are the different phases of detailed energy audit and list down the aims of the preliminary site visit?	**07**
		OR	
Q.4	**(a)**	Differentiate between the Traditional and Modern means of Biomass Energy Resources. State the importance of Ocean Bio-Energy Resources.	**07**
	(b)	Schematize the formation of Hydrocarbons with diagram. Describe Petroleum Exploration.	**07**
Q.5	**(a)**	An enclosure has an inside area of 100 m^2, and its inside surface is black and is maintained at a constant temperature. A small opening in the enclosure has an area of 0.02 m^2. The radiant power emitted from this opening is 70 W. What is the temperature of the interior enclosure wall? If the interior surface is maintained at this temperature, but is now polished, what will be the value of the radiant power emitted from the opening?	**07**
	(b)	The inner and outer surface temperatures of a glass window 5 mm thick are 15 and 5 °C, respectively. What is the heat loss through a window that is 1 m by 3 m on a side? The thermal conductivity of glass is 1.4 W/mK.	**07**
		OR	
Q.5	**(a)**	Articulate the conceptual schematic of Solar PV Energy Conversion system.	**07**
	(b)	Examine the units of measure for Mass, Volume, Specific Gravity and Density.	**07**

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