Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (OLD) - EXAMINATION – SUMMER 2017

Subject Code: 171907 **Date: 29/04/2017**

Subject Name: Energy Conservation and Management(Department Elective - I)

Time: 02:30 PM to 05:00 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)**	Define and explain the following terms (1) Power factor (2) Energy consumption (3) Sensible heat (4) Humidity (5) Load factor	**07**
	(b)	Give name and use of any three energy audit instruments.	**07**
Q.2	**(a)**	Write a comprehensive note on energy conservation and its importance	**07**
	(b)	Explain sensitivity analysis and list the micro and macro factors.	**07**
		OR	
	(b)	Give the format of energy audit report.	**07**
Q.3	**(a)**	State and explain factors that influence thermal performance of building	**07**
	(b)	Following are the data for HVAC system. Find the energy efficiency ratio. Temperature of refrigerant entering in evaporator = - 1.2 ^{0}C (negative) Temperature of refrigerant leaving evaporator = - 5 ^{0}C (negative) Flow rate of refrigerator = 15100 kg/hr Power input = 52.33 KW Specific heat capacity of refrigerant = 2.62 Kcal/kg ^{0}C Measured compressor power = 62.5 KW	**07**
		OR	
Q.3	**(a)**	Write major energy saving opportunities in refrigeration & air-conditioning plant.	**07**
	(b)	Calculate ILER value and annual energy wastage for the following. Floor area of the interior room = 45 m^2 , mounting height = 2 m, total circuit watts of the installation by power meter = 990 watt, average maintained luminance = 700 lux, target load efficiency = 46 lux/W/ m^2 , number of operating hours per day = 8, number of operating days per annum = 300 Give comment on your answer.	**07**
Q.4	**(a)**	Explain efficiency measurement methods of boiler in brief.	**07**
	(b)	Give tips for energy saving in pumps.	**07**
		OR	
Q.4	**(a)**	Write various tools used for performing financial analysis and write comprehensive note on any one tool.	**07**
	(b)	State key elements of energy monitoring and targeting systems also discuss its benefits.	**07**
Q.5	**(a)**	Classify heat recovery systems and explain any one in detail.	**07**
	(b)	List energy saving tips for lighting system.	**07**
		OR	
Q.5	**(a)**	Mention various techniques for electricity conservation.	**07**
	(b)	What is “Reference year equivalent”? How is it useful?	**07**

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