Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII (NEW) EXAMINATION – WINTER 2017

Subject Code: 2170911 **Date:02/11/2017**

Subject Name: Energy Conservation, and Audit(Departmental Elective - II)

Time: 10:30 AM TO 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)**	Discuss present energy consumption scenario of India.	**03**
	(b)	Discuss Following: 1) Commercial and Noncommercial energy 2) Renewable and Nonrenewable energy	**04**
	(c)	Explain energy conservation Act 2001 and discuss the role plays of BEE, state government and central government.	**07**
Q.2	**(a)**	An electric heater of 250 V, 4 kW rating is used for hot water generation. Find electricity consumption a) At the rated voltage per hour b) At 230 V for 3 hours	**03**
	(b)	A three phase, 10 kW motor has the technical specifications like 415 V, 18.2 amps and 0.9 PF. Actual input measurement by an energy auditor is found as 415 V, 12 amps and 0.7 PF. Which was measured with power analyzer device. Find the motor loading in percentage.	**04**
	(c)	What is energy audit? Explain detailed energy audit.	**07**
		OR	
	(c)	List the key instruments for energy audit & explain its function.	**07**
Q.3	**(a)**	Define: Latent Heat of Fusion, Contract Demand and Load factor.	**03**
	(b)	What are the disadvantages of 'direct method' of boiler efficiency evaluation over 'indirect method'?	**04**
	(c)	How to make lighting system of your college campus more efficient?	**07**
		OR	
Q.3	**(a)**	Define: Time of Day Tariff, Specific Heat and Humidity.	**03**
	(b)	Mention the various sources of waste heat recovery.	**04**
	(c)	How to improve power factor and what are the impact of improve power in electrical system.	**07**
Q.4	**(a)**	What is Indian boiler regulation?	**03**
	(b)	Explain FRC boiler in detailed.	**04**
	(c)	Explain Indirect method of energy efficiency calculate for furnace.	**07**
		OR	
Q.4	**(a)**	List down energy conservation opportunities in refrigeration system.	**03**
	(b)	Define the following parameters 1) Excess Air 2) Blow Down	**04**
	(c)	Which tool is used to represent difference between standard consumption and actual consumption? Explain with sample graph.	**07**

Q.5	**(a)**	Difference between fans, blowers and compressors?	**03**
	(b)	How to save energy by substituting existing fuel?	**04**
	(c)	Write short note on cogeneration plant. State features of cogeneration plant of a sugar manufacturing industry.	**07**

OR

Q.5	**(a)**	Explain components of compressed air system.	**03**
	(b)	Write energy saving opportunities in cooling towers.	**04**
	(c)	Justify energy efficiency measures in the compressor.	**07**

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