Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER IV– • EXAMINATION – WINTER - 2016

Subject Code: 2742102 **Date:27/10/ 2016**

Subject Name: Energy Conservation & Management

Time: 2:30 pm to 5:00 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: Power factor, Load factor, Specific heat, Latent heat of fusion, Humidity, Gross calorific value, Relative density	**07**
	(b)	Write short note on Energy Conservation Act 2001.	**07**
Q.2	**(a)**	Define the terms: SPP, ROI, NPV, IRR, Cash flow, Risk analysis & Time value of money.	**07**
	(b)	Write short note on present worth analysis	**07**
		OR	
	(b)	Enlist different financial analysis techniques used in energy economics. Explain Simple payback period and present value of money method.	**07**
Q.3	**(a)**	Mention various techniques for electricity conservation.	**07**
	(b)	What are the disadvantages of direct method of boiler efficiency evaluation over indirect method? Explain procedure to calculate boiler efficiency using indirect method	**07**
		OR	
Q.3	**(a)**	Calculate the Boiler Efficiency with indirect methods.	**07**

Type of fuel fired = Paddy husk

Paddy Husk composition:

Moisture = 10.79%	Mineral Matter = 16.73%
Carbon = 33.95%	Hydrogen = 5.01%
Nitrogen = 0.91%	Sulphur = 0.09%
Oxygen = 32.52%	GCV (Kcal/kg) = 3568
Cost of Paddy Husk = Rs. 1100 / MT	Ambient DBT = 32^0 C

Boiler parameters on Paddy Husk

Flue gas temperature = 190^0 C CO_2 in flue gas = 12 %

The losses other than exhaust loss = 28%

	(b)	List various energy conservation opportunities in a refrigeration system.	**07**
Q.4	**(a)**	Classify various energy and explain in brief.	**07**
	(b)	Discuss India's present energy scenario and long term energy scenario.	**07**
		OR	
Q.4	**(a)**	Define energy security. Enlist different strategies to achieve it and discuss role of energy conservation to achieve energy security.	**07**
	(b)	What do you understand by ESCOs and Performance contracts? Explain in brief.	**07**
Q.5	**(a)**	Briefly discuss about KYOTO protocol	**07**
	(b)	Explain detailed energy audit report format for a typical process industry.	**07**
		OR	
Q.5	**(a)**	Briefly discuss about carbon market.	**07**

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