GUJARAT TECHNOLOGICAL UNIVERSITYME - SEMESTER- II(New course) • EXAMINATION (Remedial) – WINTER- 2015Subject Code: 2722112Date: 11/12/2015Subject Name: EXERGY ANALYSIS OF THERMAL SYSTEMSTime: 2:30 pm to 5:00 pmTotal Marks: 70Instructions:1. Attempt all questions.2. Make suitable assumptions wherever necessary.3. Figures to the right indicate full marks.			
Q.1	(a) (b)	Define concept of exergy and irreversibility. Explain modified Gouy-Stodola theorem.	07 07
Q.2	(a) (b)	Explain concept of effective temperature for exergy destruction. Explain exergy analysis for combustion process.	07 07
	(b)	Explain exergy analysis for compression and expansion processes.	07
Q.3	(a) (b)	Explain exergy analysis for Joule Thomson expansion process. Explain external and internal irreversibility of simple gas turbine power plant. OR	07 07
Q.3	(a) (b)	Explain exergy analysis for Evaporative cooling process. Explain external and internal irreversibility of simple steam turbine power plant.	07 07
Q.4	(a)	Consider an air compressor that receives ambient air at 100kpa and 25°C. It compresses the air to 1 Mpa, where it exits at a temperature of 540K. Flowing through the compressor 50 kJ per Kg air is lost. Find Exergy destruction during the process	07
	(b)	How does reheating affect the exergy of steam power plant? OR	07
Q.4	(a)	Calculate the decrease in available energy when 25kg of water at 95°C mix with 35 kg of water at 35°C, the pressure being taken as constant and temperature of surroundings being 15°C.	07
	(b)	How does intercooling affect the exergy of air compressor?	07
Q.5	(a) (b)	Explain fundamentals of exergy economics. Explain exergy economics for steam turbine.	07 07
Q.5	(a) (b)	Explain exergy economics for cogeneration system. Explain exergy economics for gas turbine.	07 07
