GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– III EXAMINATION – SUMMER 2015

Subject Code: 130405   **Date:27/05/2015**
Subject Name: Thermodynamics
Time: 02.30pm-05.00pm   **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 limitations of 1st Law of Thermodynamics?	**07**
	(b)	Derive steady flow energy equation for any one system.	**07**
Q.2	**(a)**	What are the various statements of 2nd Law of Thermodynamics?	**07**
	(b)	Explain the concept of entropy change in detail.	**07**
		OR	
	(b)	Describe both types of vapor compression refrigeration cycle with the help of neat diagrams	**07**
Q.3	**(a)**	Derive the PVT relations, ΔU, W, Q and ΔH for Isothermal, Isobaric, and Isochoric reversible processes.	**07**
	(b)	Give the comparison of work of expansion of an ideal Gas and a van der Waals Gas.	**07**
		OR	
Q.3	**(a)**	Explain Raoult's law with its deviations.	**07**
	(b)	Discuss basic fundamentals of phase equilibrium with examples.	**07**
Q.4	**(a)**	State and prove Carnot theorem for heat engines.	**07**
	(b)	Write a short note on Refrigerants.	**07**
		OR	
Q.4	**(a)**	Explain the term 'temperature'. Mention different units of temperature and relations among various temperature scales with diagrams.	**07**
	(b)	Explain with examples Sensible heat, Latent heat and Standard heats of formation, reaction and combustion.	**07**
Q.5	**(a)**	Explain 1TR in reference to refrigeration.	**07**
	(b)	Discuss fundamentals of chemical reaction equilibrium with examples.	**07**
		OR	
Q.5	**(a)**	Write a short note on Thermodynamic Diagrams.	**07**
	(b)	Write a general Maxwell relation and Derive any two Maxwell equations.	**07**

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