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

Subject Code:132102Date:23/12/2Subject Name: Metallurgical ThermodynamicsTotal MarkTime: 2:30pm to 5:00pmTotal MarkInstructions:Total Mark			:23/12/2015 al Marks: 70	
Q.1	(a) (b)	Differentiate between extensive and intensive properties. State 0 th and 1 st Law of thermodynamics. Explain concept of internal energy and give significance of 1 st Law of thermodynamics.	07 07	
Q.2	(a)	What is System and surrounding in thermodynamics? Classify of system with suitable example.	07	
	(b)	Write note on quasistatic process.	07	
	(b)	Derive combined expression of 1 st and 2 nd Law of thermodynamics in terms of enthalpy and free energy.	07	
Q.3	(a) (b)	Explain Hess' Law and Krichoff's Law. State 2 nd and 3 rd Law of thermodynamics and explain concept of entropy. OR	07 07	
Q.3	(a) (b)	Explain Raoult's law and Sievert's law. Compare reversible and irreversible processes.	07 07	
Q.4	(a) (b)	What is Free Energy? Explain concept of Gibb's Free Energy. What information is sought from Ellingham Diagram? Use suitable example wherever required.	07 07	
Q.4	(a) (b)	OR Explain fugacity, activity and mole fraction. What is equilibrium? Explain different types of equilibrium.	07 07	
Q.5	(a)	What is Gibb's Phase Rule and explain terms if possible with suitable example.	07	
	(b)	List its applications. What is meant by Heat Capacity, give its unit and derive $Cp - Cv = R$. OR	07	
Q.5	(a) (b)	Write note on Functions of slag. Discuss the Concept of basicity index.	07 07	
