Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) - EXAMINATION - SUMMER 2016

Subject Code:2152106 Subject Name:Physical Metallurgy		ect Code:2152106 Date:21/05/20	Date:21/05/2016	
1	ime	:02:30 PM to 05:00 PM ctions: 1. Attempt all questions. 2. Make suitable assumptions wherever necessary. 3. Figures to the right indicate full marks.	70	
Q.1	(a)(b)	Draw, sketch and label Iron-Iron carbide equilibrium diagram. Explain varios phases and transformation reactions. Draw following planes and directions: (112), (-1-1-1), (001), (011), [100], [-111] [-102]	07 07	
Q.2	(a)(b)	Define alloy with examples. Explain the terms: System, Component, Phase, Degree of freedom, micro constituent. Discuss Gibb's phase rule with example. OR	07 07	
	(b)	Draw and explain cooling curves for pure metal, binary solid solution alloy and binary eutectic alloy.	07	
Q.3	(a) (b)	Explain Plain carbon steel . Draw and label microstructures of Hypoeutectoid, Eutectoid and Hypereutectoid plain carbon steels. Draw and briefly explain the Copper-Ni binary phase diagram. OR	07 07	
Q.3	(a) (b)	Discuss effect of alloying elements on the properties of steel. What is Steel? How steel is classified? Explain briefly alloy steel.	07 07	
Q.4	(a) (b)	Define austenitic grain size? Explain the method of grain size measurement. Draw a labeled microstructure of gray cast iron. Give basic chemical composition, properties and applications of Gray cast iron. OR	07 07	
Q.4	(a) (b)	Write a sort note on: Coding of Steel as per Indian Standards (IS). Explain briefly Nucleation and Growth mechanism during solidification. What is Supercooling?	07 07	
Q.5	(a) (b)	Discuss briefly about S G iron. Draw and briefly explain the Aluminium-Silicon binary system. OR	07 07	
Q.5	(a) (b)	What is Metallography ?Explain specimen preparation techniques for Metallography. Draw and explain Metallurgical microscope.	07 07	
