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GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III • EXAMINATION – SUMMER 2013

Sul	bject	Code: 133403 Date: 29-05-2013	
Tir	U	t Name: Engineering Materials & Metallurgy 02.30 pm - 05.00 pm Total Marks: 70 ons:	
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Q.1	(a) (b)	Explain briefly the Iron- carbon equilibrium diagram with a neat sketch. Define Constitution of alloy. Explain the isomorphism microstructural development with a neat sketch	07 07
Q.2	(a)	Briefly discuss about the heat treating methods of spheroidizing and	07
	(b)	normalizing with a neat sketch Define Hardenability. Explain the Jominy end quench test method with a neat sketch.	07
		OR	
	(b)	Explain briefly about the thermo mechanically treatment process with a neat sketch	07
Q.3	(a) (b)	Explain the TTT diagram and CCT cooling curve with a neat sketch. Explain the effect of alloying the copper and aluminum metal and its alloys. OR	07 07
Q.3	(a)	Explain the heat treatment method of nitriding and carburizing with a neat sketch.	07
	(b)	Briefly explain the properties and applications of titanium and nickel alloys.	07
Q.4	(a) (b)	Discuss about the types, properties and applications of Plastics. Discuss about the types, properties and applications of Thermosetting Plastics OR	07 07
Q.4	(a) (b)	Explain in brief about the classification of ceramics with applications Write short notes about the nanomaterials with applications	07 07
Q.5	(a)	Discuss the working principle of Brinell hardness testing machine with neat sketch	07
	(b)	Explain crystal imperfection and discuss the strengthening mechanisms and modulus of elasticity with a neat sketch OR	07
Q.5	(a) (b)	Explain the mechanisms of fracture - fatigue test with neat sketch Discuss the working principle of Charpy & izod impact testing machine with a neat sketch	07 07
