Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-III (New) EXAMINATION - WINTER 2015

Subject	Subject Code:2133403 Date:2		23/12/2015
•		ne: Engineering Materials and Metallurgy m to 5:00pm Tota	l Marks: 70
Instruction		1 00 0 0 0 pm	- 111011150 7
		mpt all questions.	
		e suitable assumptions wherever necessary.	
3.	Figu	res to the right indicate full marks.	MADEC
			MARKS
Q.1		Short Questions	14
	1	Define Lever rule.	
	2	Write full form of TTT Diagram.	
	3	Classify crystal imperfection.	
	4	What is Polymerisation ?	
	5	Name any five non ferrous metals.	
	6	Define composites.	
	7	Classify solid solutions.	
	8	Write types of quenching in heat treatment.	
	9	What is Allotropy?	
	10	Draw cooling curve of binary eutectic system.	
	11	Define Martensite.	
	12	Define heat treatment.	
	13	Name any four destructive testing.	
	14		
Q.2	(a)		03
	(b)	, 1	04
		2) Binary solid solution.	
	(c)	•	07
		information. Explain all reactions.	
	(-)	OR	07
	(c)	Explain Hume Rothery's rules governing formation of substitutional solid solutions.	07
Q.3	(a)	Define full annealing. Explain purposes of full annealing.	03
Q.3	(a) (b)		03
	(0)	hardening.	04
	(c)	What are purposes of heat treatment? Classify heat treatment.	07
	(0)	OR	<i>.</i>
Q.3	(a)		03
•	(b)	~	04
	` ,	hardening.	
	(c)	Explain principles of heat treatment. What are stages of heat	07
		treatment?	
Q.4	(a)	± •	03
	(b)		04
	(c)	Define nanomaterials. Explain their properties.	07
		OR	
Q.4	(a)	Write characteristics of ceramics.	03
	(b)	Write short note on Bio-degradable plastic.	04

70

	(c) Classify composites. Which properties of composites make	07
	them better than conventional materials?	
Q.5	(a) Write applications of aluminium and its alloys.	03
	(b) Explain effect of alloying elements on steel.	04
	(c) Explain procedure of creep testing with diagram.	07
	OR	
Q.5	(a) Write applications of nickel and its alloys.	03
	(b) Classify steel and cast iron.	04
	(c) Explain procedure of hardness testing with diagram.	07
