Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–III (NEW) - EXAMINATION – SUMMER 2017

Subject Code: 2132101 **Date: 31/05/2017**

Subject Name: Elements of Metallurgy

Time: 10:30 AM to 01:00 PM **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1		**Short Questions**	**14**
	1	Define Stress and Strain.	
	2	What is Composite material?	
	3	Define Hardness.	
	4	What is material science?	
	5	What is Corrosion.	
	6	Define Ore.	
	7	What is Mineral?	
	8	Explain Foundry in brief.	
	9	List out properties of Ceramic materials.	
	10	List out properties of metallic materials.	
	11	Give ores/minerals of Aluminium and copper metals with its chemical composition.	
	12	Define specific heat and heat capacity.	
	13	Define toughness and brittleness.	
	14	Give ores/minerals of Iron and lead metals with its chemical composition.	
Q.2	**(a)**	Differentiate between Ductility and Malleability.	**03**
	(b)	What are effect of grain size on properties of metallic material.	**04**
	(c)	Give in details different types of materials with important characteristics and engineering use.	**07**
		OR	
	(c)	What is polymer? What is polymerization. List out different polymerization mechanism. Explain one of it.	**07**
Q.3	**(a)**	List out Metallurgical industries in india.	**03**
	(b)	Explain structure – property relation for material with suitable example.	**04**
	(c)	Explain MMC, PMC and CMC and give examples of each composite material.	**07**
		OR	
Q.3	**(a)**	Short note on Brick.	**03**
	(b)	Draw flow sheet about extraction of Copper from its sulphide ore .	**04**
	(c)	Explain Blast furnace in detail for production of Iron.	**07**

Q.4	**(a)**	Explain in brief about cement.	**03**
	(b)	List out application of powder metallurgy.	**04**
	(c)	What is powder metallurgy. Write different steps, advantages, limitation .	**07**

OR

Q.4	**(a)**	Draw flow diagram of extraction of Aluminium.	**03**
	(b)	Differentiate between hot rolling and cold rolling.	**04**
	(c)	What is casting? Explain various steps briefly.	**07**
Q.5	**(a)**	Differentiate between soldering and brazing.	**03**
	(b)	What do you mean by metal joining? Write different techniques of metal joining.	**04**
	(c)	What is Rolling. Explain various types of rolling mills.	**07**

OR

Q.5	**(a)**	Explain Forging in brief.	**03**
	(b)	Expain Cathodic Protection.	**04**
	(c)	Explain Intergrannular Corrosion in detail.	**07**

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