Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2130506 Date:05/01/2016

Subject Name: Chemical Engineering Materials

Time: 2:30pm to 5:00pm 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 creep.	
	2	What do you mean by powder metallurgy?	
	3	Explain ferroelectricity.	
	4	Write applications of polymers.	
	5	Explain concept of Bohr's model.	
	6	Differentiate between plasticity and elasticity.	
	7	Write different methods of heat treatment.	
	8	Write different types of corrosion.	
	9	Explain point imperfection.	
	10	Enlist any four polymers.	
	11	Define isotropy and anisotropy.	
	12	Explain semiconductors.	
	13	Explain co-ordination number.	
	14	Explain crystal structures.	
Q.2	**(a)**	What are polymers?	**03**
	(b)	Explain atom-Rutherford's model in detail.	**04**
	(c)	Briefly explain various types of bonds and their energies.	**07**
		OR	
	(c)	Explain classification of ceramics.	**07**
Q.3	**(a)**	Define: fatigue, permeability, bakelite.	**03**
	(b)	State thermal treatment of steel in detail.	**04**
	(c)	Explain paints and give the classification of paints.	**07**
		OR	
Q.3	**(a)**	Explain polyvinyl chloride in detail.	**03**
	(b)	Differentiate thermosetting plastic and thermoplastic.	**04**
	(c)	List out different methods to control and prevent the corrosion? Explain any one in detail.	**07**
Q.4	**(a)**	Explain the purpose of annealing in detail.	**03**
	(b)	Give classification of magnetic materials.	**04**
	(c)	Explain any two x-ray diffraction methods in detail.	**07**
		OR	
Q.4	**(a)**	What is hardening? Write the requirements of hardening.	**03**
	(b)	State properties of refractories.	**04**
	(c)	Write a short note on different mechanical properties of materials.	**07**

Q.5	**(a)**	Write application of powder metallurgy.	**03**
	(b)	Explain mechanism of electrochemical corrosion.	**04**
	(c)	Explain different factors influencing corrosion in detail.	**07**

OR

Q.5	**(a)**	Enlist various crystal defects.	**03**
	(b)	Write principle of heat treatment with its applications.	**04**
	(c)	Explain crystal structures and arrangement of packing.	**07**

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