

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER– III (New) EXAMINATION – WINTER 2019

**Subject Code: 2132101**

**Date: 28/11/2019**

**Subject Name: Elements of Metallurgy**

**Time: 02:30 PM TO 05:00 PM**

**Total Marks: 70**

**Instructions:**

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

		MARKS
<b>Q.1</b>	(a) Give classification of Engineering materials with examples.	<b>03</b>
	(b) Define Toughness, Ductility, Malleability, hardness	<b>04</b>
	(c) Explain the criteria for the selection of materials for engineering application.	<b>07</b>
<b>Q.2</b>	(a) Define metals and alloys. Classify them.	<b>03</b>
	(b) Explain with stress-strain diagram plasticity and elasticity of metals.	<b>04</b>
	(c) What are the imperfections in crystals? Explain about point defect with figure.	<b>07</b>
	<b>OR</b>	
	(c) Compare and contrast edge dislocation and screw dislocation.	<b>07</b>
<b>Q.3</b>	(a) Define Ceramics.	<b>03</b>
	(b) What is burgers vector? Explain the relationship between burgers vector and line vector.	<b>04</b>
	(c) Briefly explain about ceramic structures and properties.	<b>07</b>
	<b>OR</b>	
<b>Q.3</b>	(a) Define composite. Give classification of composite based on matrix constituents.	<b>03</b>
	(b) Give example of natural composites.	<b>04</b>
	(c) Write a short note on cement and their products.	<b>07</b>
<b>Q.4</b>	(a) Define polymer.	<b>03</b>
	(b) Give classification of polymers.	<b>04</b>
	(c) What is polymerization? List out different polymerization mechanism. Explain one of it.	<b>07</b>
	<b>OR</b>	
<b>Q.4</b>	(a) What is refractory? What are the properties of refractory?	<b>03</b>
	(b) List out the renowned metallurgical industries in different fields.	<b>04</b>
	(c) Discuss the different fields of metallurgy? What are the sources of metals? What is the principle of production of Iron?	<b>07</b>
<b>Q.5</b>	(a) What do you mean by founding? Give classification of Foundry based on type of work.	<b>03</b>
	(b) What are the steps to be performed to produce casting in foundry?	<b>04</b>
	(c) What is rolling? Classify the rolling mills with neat sketch.	<b>07</b>
	<b>OR</b>	
<b>Q.5</b>	(a) Define welding. What is the basic difference between soldering and brazing?	<b>03</b>
	(b) On which principle corrosion occurs on the metals? What are steps to prevent the corrosion?	<b>04</b>
	(c) Define wear. What are the types of wear? Explain briefly.	<b>07</b>

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