

Seat No.: \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-III (New) EXAMINATION – WINTER 2018****Subject Code:2132104****Date:05/12/2018****Subject Name:Testing of Metals and Alloys****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	(a) Explain the objective of testing of materials.	03
	(b) Define the following	04
	1) Ductility,	
	2) Toughness,	
	3) Young's Modulus,	
	4) % Elongation.	
	(c) Draw, explain and differentiate engineering and true stress-strain curve.	07
Q.2	(a) Multiple Choice Questions:	03
	1) Whenever some external system of forces acts on a body, it undergoes some deformation. As the body undergoes some deformation, it sets up some resistance to the deformation. This resistance per unit area to deformation, is called	
	a. Strain	
	b. Pressure	
	c. Stress	
	d. Modulus of elasticity	
	2) Modulus of rigidity can be defined as the ratio of	
	a. Linear stress to linear strain	
	b. Lateral strain to linear strain	
	c. Linear stress to lateral strain	
	d. Shear stress to shear strain	
	3) The unit for Young's modulus is	
	a. N	
	b. N/m	
	c. N/m <sup>2</sup>	
	d. No unit	
	(b) Explain Izod impact test.	04
	(c) What is calibration of instruments? Discuss the importance of calibration of testing instruments	07
	<b>OR</b>	
	(c) Classify material testing methods. Describe the criteria for selection of testing method.	07
Q.3	(a) What do you understand by rebound Hardness test?	03
	(b) List Rockwell Hardness Test advantages & limitations.	04
	(c) Discuss about Vickers Hardness Test method. Enlist advantages and limitations.	07

**OR**

- Q.3** (a) Define creep. Draw a typical creep curve. **03**  
(b) Discuss Factors affecting creep behavior. **04**  
(c) 'Testing of material is an important task for industry' – justify comment. **07**
- Q.4** (a) Write a note on yield point phenomena. **03**  
(b) Give mechanism of cup and cone type fracture. **04**  
(c) Explain the procedure of tensile testing. **07**
- OR**
- Q.4** (a) Discuss the effect of temperature on flow properties. **03**  
(b) Draw and describe S-N curves for ferrous metals. **04**  
(c) What is meant by fatigue failure? Write a note on fatigue Mechanisms in metals **07**
- Q.5** (a) Differentiate between ductile and brittle fracture. **03**  
(b) Explain Mechanism of Brittle fracture propagation. **04**  
(c) What is ductile to brittle transition behavior and it's significance? Draw suitable diagram. **07**
- OR**
- Q.5** (a) Describe the Bauschinger effect. **03**  
(b) Write the formula for Brinell and Knoop hardness along with symbol description. **04**  
(c) Describe Charpy Impact test. Derive Relationship for energy absorbed by specimen. **07**

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