

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-III (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2132104****Date: 05/06/2017****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	Short Questions	14
	1 Softest mineral on Mohs scale is _____	
	2 Indenter for Rockwell hardness Scale C is made by:	
	3 Primary load for Rockwell hardness Scale C is:	
	4 Hardest natural material so far found is _____	
	5 Unit of Yield strength is _____	
	6 Area under stress strain curve is known as _____	
	7 Formula for % Elongation is:	
	8 Formula for % Reduction in area is:	
	9 Define Resilience.	
	10 Define young's Modulus.	
	11 Define Ductility.	
	12 Define Impact strength.	
	13 Define creep	
	14 Define Fatigue limit .	
Q.2	(a) Describe the objective of 'testing of material'.	03
	(b) Describe the variables affecting Fatigue strength.	04
	(c) Discuss the criteria for selection of testing method. Explain the importance of calibration of testing instruments.	07
	OR	
	(c) Describe the fatigue test with schematic of fatigue testing machine.	07
Q.3	(a) Describe the Bauschinger effect.	03
	(b) Write a short note on effect of temperature and strain rate on flow properties.	04
	(c) Explain the procedure of tensile testing in brief.	07
	OR	
Q.3	(a) Give a detailed Classification for testing of material.	03
	(b) Differentiate between ferrous alloys and non ferrous alloys with reference to their respective S-N curves.	04
	(c) Draw Stress-strain diagram for brittle and ductile material and label it properly. Describe the yield point phenomena.	07
Q.4	(a) Enlist advantages & limitations of rebound Hardness test.	03
	(b) Discuss about Rockwell scales A & B.	04
	(c) Discuss Brinell Hardness Test Procedure in detail. Mention Limitations.	07
	OR	
Q.4	(a) Define and explain Creep-Rupture strength.	03
	(b) Discuss Factors affecting creep behavior.	04
	(c) Discuss about Vicker Hardness Test method. Enlist advantages & limitations.	07
Q.5	(a) Define and explain Creep strength.	03

- (b) Explain Mechanism of cup and cone type fracture. **04**
- (c) Describe Charpy Impact test. Derive Relationship for energy absorbed by specimen. **07**

OR

- Q.5**
- (a) Differentiate between ductile and brittle fracture. **03**
 - (b) Explain Mechanism of Brittle fracture propagation. **04**
 - (c) Describe the creep testing method. **07**
