Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject Code:2132104 **Date:23/12/2015**

Subject Name: Testing of Metals and Alloys

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 Ductility.	
	2	Toughness is measured as	
	3	Define young's Modulus.	
	4	Define Strain.	
	5	Write formula of % Elongation.	
	6	Write formula of % Reduction in area.	
	7	Define Resilience.	
	8	Yield strength is_____	
	9	Define Impact strength.	
	10	Define Hardness.	
	11	Define creep.	
	12	Define the Fatigue life.	
	13	Define Fatigue strength.	
	14	Fatigue limit is_____	
Q.2	**(a)**	Explain the criteria for selection of testing method.	**03**
	(b)	'Testing of material is an important task for industry' - justify comment.	**04**
	(c)	What is calibration of instruments? Discuss the importance of calibration of testing instruments.	**07**
		OR	
	(c)	Write a note on effect of temperature and strain rate on flow properties.	**07**
Q.3	**(a)**	Explain about yield point phenomena.	**03**
	(b)	Discuss true stress-strain curve.	**04**
	(c)	Explain the Brinell Hardness Test Procedure in detail. Mention Limitations.	**07**
		OR	
Q.3	**(a)**	Discuss about Scratch Hardness test.	**03**
	(b)	What do you understand by rebound Hardness test? Mention limitations.	**04**
	(c)	Discuss about Vicker Hardness Test method. Enlist advantages & limitations.	**07**
Q.4	**(a)**	Differentiate between ductile and brittle fracture.	**03**
	(b)	Give Mechanism of cup and cone type fracture.	**04**
	(c)	Describe Charpy Impact test. Derive Relationship for energy	**07**

absorbed by specimen.

OR

Q.4	**(a)**	Draw a typical creep curve and label it.	**03**
	(b)	Discuss important features of fatigue failure.	**04**
	(c)	Write a note on Mechanism of creep deformation in metals.	**07**
Q.5	**(a)**	Enlist different Rockwell scales with indenter used.	**03**
	(b)	Explain Izod impact test.	**04**
	(c)	Differentiate between ferrous alloys and non ferrous alloys with reference to their respective S-N curves.	**07**

OR

Q.5	**(a)**	Mention Factors affecting Impact Test.	**03**
	(b)	Discuss Factors affecting creep behavior.	**04**
	(c)	Write a note on fatigue Mechanisms in metals.	**07**

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