Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VII • EXAMINATION – WINTER 2013

Subject Code: 172101 Date: 26-11-2013

Subject Name: Physical Metallurgy - II

Time: 10:30 TO 01:00 Total Marks: 70

Instructions:

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

Q.1	**(a)**	Discuss briefly Hull – Mehl model of pearlitic transformation.	**07**
	(b)	Describe the mechanism of formation of upper and lower bainite	**07**
Q.2	**(a)**	Differentiate between upper and lower bainite	**07**
	(b)	How carbon content, presence of carbide forming elements, prior heat treatment and interlamellar spacing effect on the kinetics of formation of austenite on heating.	**07**
		OR	
		Explain heattreatment of EN-8 Steel.	
Q.3	**(a)**	How Austenitic grain size is measured? Explain any one technique.	**07**
	(b)	Draw the crystal structure of Martensite? Discuss Bain Distortion Model.	**07**
		OR	
Q.3	**(a)**	What are different heat treatment processes for steel? Expain recrystallization annealing.	**07**
	(b)	Short note on thermo mechanical treatment	**07**
Q.4	**(a)**	Differntiate between Aus tempering treatment and Mar tempering treatment.	**07**
	(b)	Explain heat treatment of HSS tool steel.	**07**
		OR	
Q.4	**(a)**	Explain why hardening by quenching is followed by tempering treatment? How do mechanical properties vary with tempering temperature?	**07**
	(b)	What is Hardenability? What are different methods carried out to check this? Explain about Jominy end quench test.	**07**
Q.5	**(a)**	Which are different surface hardening heat treatments of steel? Explain about pack carburizing.	**07**
	b)	What is Quenching? Whar are the characteristics of Quenchant?	**07**
		OR	
Q.5	**(a)**	Short note on Retained Austenite.	**07**
	(b)	Short note on thermo mechanical treatment.	**07**

****