Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2162107 **Date:11/05/2016**

Subject Name: Heat Treatment

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.**

Q.1	**(a)**	What are different methods of grain size measurement? Discuss any one.	**07**
	(b)	Discuss kinetics of austenite formation.	**07**
Q.2	**(a)**	What is critical cooling rate (CCR)? With neat sketch explain time temperature transformation (TTT) diagram and give its applications.	**07**
	(b)	Write note on Continuous cooling transformation (CCT) diagram.	**07**
		OR	
	(b)	Discuss the process of annealing in detail.	**07**
Q.3	**(a)**	Discuss Bain distortion model.	**07**
	(b)	Briefly explain ausforming treatment.	**07**
		OR	
Q.3	**(a)**	What is hardenability? Explain hardenability measurement by Jominy End Quench test.	**07**
	(b)	Compare normalizing and hardening processes.	**07**
Q.4	**(a)**	What is induction hardening? Discuss induction hardening as method of surface hardening.	**07**
	(b)	How banitic structure is different than pearlitic and martenstic structure? Explain.	**07**
		OR	
Q.4	**(a)**	What are different methods of case carburizing and give its need? Explain pack carburizing by coal.	**07**
	(b)	Explain mechanism of pearlitic transformation with neat sketch.	**07**
Q.5	**(a)**	What is age hardening? Explain it with example.	**07**
	(b)	Discuss heat treatment of any alloy steel.	**07**
		OR	
Q.5	**(a)**	Discuss defects in heat treated parts with their causes and remedies.	**07**
	(b)	Explain construction of time temperature transformation (TTT) diagram and draw neat sketch of TTT diagram for eutectoid steel.	**07**

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