Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

P.D.D.C. Sem- III Examination December 2010

Subject code: X31902
Subject Name: Material Science & Metallurgy

Date: 13 /12 /2010 **Time: 10.30 am – 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)**	Define 1) Material Science 2) Metallurgy 3) Metal 4) Alloy 5) Allotropy 6) Ceramic 7) Composite material	**07**
	(b)	Explain selection criteria for engineering materials.	**07**
Q.2	**(a)**	Explain Magnetic particle test and its application.	**07**
	(b)	Which process is used to make electric bulb filament? Explain the steps of process used for it.	**07**
		OR	
	(b)	Explain the importance of compacting and sintering process. Explain any one process.	**07**
Q.3	**(a)**	Draw Iron Carbon Equilibrium Diagram. Explain eutectoid reaction in it.	**07**
	(b)	What is phase diagram? Explain Lever rule.	**07**
		OR	
Q.3	**(a)**	What are micro and macro examination? Explain steps micro examination process.	**07**
	(b)	Give composition and use of White metal and Monel metal.	**07**
Q.4	**(a)**	Explain different types of carburizing process.	**07**
	(b)	Explain application of Annealing, Normalizing and Spheroidizing. Explain any one from above process.	**07**
		OR	
Q.4	**(a)**	Describe different alloys of copper.	**07**
	(b)	What is Wrought iron? Enlist properties and application of it.	**07**
Q.5	**(a)**	Explain composition, structure, properties and use of grey cast iron.	**07**
	(b)	Explain the effects of allying elements on properties of steel.	**07**
		OR	
Q.5	**(a)**	Explain different methods of protection against corrosion.	**07**
	(b)	Explain Jominy End-Quench test.	**07**

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