Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

Diploma Engineering - SEMESTER–III • EXAMINATION – WINTER 2013

Subject Code: 3335503 **Date: 30-11-2013**

Subject Name: Materials & Metallurgy

Time: 02:30 pm - 05:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **English version is considered to be Authentic.**

Q.1	(a)	List out the different mechanical properties of materials and explain any five.	**07**
	(b)	Explain the chemical composition, properties and application of Gray Cast Iron.	**07**
Q.2	(a)	Explain effect of various alloying element on properties of steel.	**07**
	(b)	Explain chemical composition and properties of Austenitic stainless steel, Ferritic stainless steel and Duplex stainless steel.	**07**
		OR	
	(b)	Explain properties and application of the Titanium.	**07**
Q.3	(a)	Explain different material and their requirement for high temperature service. Write applications where high temperature service material required.	**07**
	(b)	Described the properties and applications of ceramic material.	**07**
		OR	
Q.3	(a)	Described the properties and applications of plastic.	**07**
	(b)	Write brief note on cladded materials.	**07**
Q.4	(a)	Explain in brief with neat sketch crystal structure of SC, BCC, FCC, HCP of the various metals.	**07**
	(b)	List out the different micro constituents of iron and explain them in brief.	**07**
		OR	
Q. 4	(a)	Draw neat sketch of IC diagram and show different micro constituents observed in it.	**07**
	(b)	Explain in brief with neat sketch of T T T diagram.	**07**
Q.5	(a)	Define the “heat treatment process”. Explain purpose/functions and principle of heat treatment process.	**07**
	(b)	Write brief note on ASME Sec-2.	**07**
		OR	
Q.5	(a)	Explain Austempering and Mar tempering process in brief.	**07**
	(b)	Write chemical composition, mechanical properties and application of Following ferrous alloys	**07**

Sr.no	Description	Sr.no	Description
1	BIS 2062	5	SA 386
2	SA 515 GR 70	6	SA 240 TP 304
3	SA105	7	SA 240 TP 347
4	SA 240 TP 316L		

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