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## GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-III EXAMINATION – SUMMER 2016

Subject Code:132101 Dat Subject Name:Elements of Metallurgy and Material Science			Date:09/06/2016
-	e:10	:30 AM to 01:00 PM	Total Marks: 70
	2.	Attempt all questions.  Make suitable assumptions wherever necessary.  Figures to the right indicate full marks.	
Q.1	(a)	Define Material science and Metallurgy and explain requirements of Engineering Materials	03 +04
	<b>(b)</b>	Give the Criteria for selection of materials for engineering applications	07
Q.2	(a)	What do you mean by deformation? Differentiate in Elastic and Plastic Deformation.	1 03 +04
	<b>(b)</b>	Explain the effects of grain size, heat treatment and alloyin elements on properties of single phase material. <b>OR</b>	ng <b>07</b>
	<b>(b)</b>	What is imperfection? Discuss different crystals imperfections in metallic material in brief	02 +05
Q.3	(a) (b)	Define and explain: (1) Creep (2) Resilience (3) Hardness Discuss structure, properties relationship in metals, ceramics, and polymers also indicate the type of bonding in these materials	02+03+02 07
		OR	
Q.3	(a)	What is composite? Explain comparison between metal matrix and ceramic matrix composite.	07
	<b>(b)</b>	Define Metal Casting and explain any one MetalCasting process with net schematics and common components produced by this process.	
Q.4	(a) (b)	Differentiate between n-type and p-type semi-conductors Write a short note on Piezoelectric materials OR	07 07
Q.4	(a)	Discuss electrochemical Principle of Corrosion. List the different methods of corrosion preventions.	04+03
Q.5	(b) (a)	Differentiate between cold working and hot working. What is difference between Destructive &Non-destructive testing? Explain any one NDT test method.	07 07
	<b>(b)</b>		
		OR	
Q.5	(a)	What is powder metallurgy? Write advantages- limitations and applications of powder metallurgy.	03 +04
	<b>(b)</b>	Explain the Principle difference between welding, Brazing and soldering	07