Enrollment No:-_____ Exam Seat No:-_____

C.U.SHAH UNIVERSITY

Summer-2015

Subject Code: 4TE03MTE1 **Subject Name: Material Technology**

Course Name:B.Tech (Auto, Mech) Date: 11/5/2015

Semester:III Marks: 70

Time:02:30 TO 05:30

Instructions:

1) Attempt all Questions of both sections in same answer book/Supplementary.
2) Use of Programmable calculator & any other electronic instrument prohibited.
3) Instructions written on main answer book are strictly to be obeyed.
4) Draw neat diagrams & figures (if necessary) at right places.
5) Assume suitable & perfect data if needed.

SECTION-I

Q-1(a)		Define the following terms using stress strain diagram.	
		Stiffness	02
		Ductility	02
		Yield Strength	02
	(b)	Write full form of TTT diagram.	01
Q-2	(a)	Draw a neat and labeled sketch of Iron Carbon equilibrium diagram and explain the solidification of 0.4 % carbon steel.	05
	(b)	Draw the structure of and calculate the number of atoms per unit cell for B. C. C and F. C. C structures.	05
	(c)	What are the factors governing solid solution formation?	04
		OR	
Q-2	(a)	Give the broad classification of equilibrium diagram and draw labeled TTT diagram for 0.8 carbon steel.	05
	(b)	Write a short note on Isomorphous type of equilibrium diagram.	05
	(c)	Draw the neat and labeled sketches: (i)Edge and (ii) Screw type of dislocations.	04
Q-3	(a)	Give the characteristics of White Cast Iron.	05
	(b)	What do you mean by the term Babbit metal? Give the features and application of the same.	05
	(c)	Compare and differentiate Edge and Screw dislocation.	04
		OR	
Q-3	(a)	Write a short note on Spheroidise cast iron.	05
	(b)	Write a short note on Yellow metal.	05
	(c)	Explain with neat sketch the Frank-Read source of dislocation.	04

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SECTION-II

Q-4(a)	Define the following terms:		
	(a)	Nitriding	02
	(b)	Galvanizing	02
	(c)	Hardenability	02
	(d)	Engineering Material	01
Q-5	(a)	Discuss the steps of quenching of steel.	05
	(b)	Give the details of Liquid carburizing process.	05
	(c)	Explain Dye Penetrant test by stating its major application.	04
		OR	
Q-5	(a)	Discuss the advantages and limitations of normalizing treatment.	05
	(b)	Write a short note on Jominy end quench test showing all necessary figures.	05
	(c)	Write a short note on radiography method for NDT.	04
Q-6	(a)	How does the metal powder characterization can be done in PM processes?	04
	(b)	Explain the sintering and pre sintering processes.	05
	(c)	Discuss the engineering requirements of materials.	05
		OR	
Q-6	(a)	List the secondary operations of powder metallurgical process and explain infiltration process.	04
	(b)	Discuss any two methods of powder production with neat sketch.	05
	(c)	Give a broad classification of engineering materials.	05