

Enrollment No: _____

Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2016

Subject Name : Material Technology

Subject Code : 4TE03MTE1

Branch: B.Tech (Mech,Auto)

Semester : 3

Date : 03/05/2016

Time : 2:30 To 5:30

Marks : 70

Instructions:

- (1) Instructions written on main answer book are strictly to be obeyed.
 - (2) Draw neat diagrams and figures (if necessary) at right places.
 - (3) Assume suitable data if needed.
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Q-1

Attempt the following questions:

(14)

- a) Specify the sequence correctly
 - (A) Grain growth, recrystallisation, stress relief
 - (B) Stress relief, grain growth, recrystallization
 - (C) Stress relief, recrystallisation, grain growth
 - (D) Grain growth, stress relief, recrystallisation
- b) Which of the following material has maximum ductility?
 - (A) Mild steel
 - (B) Copper
 - (C) Nickel
 - (D) Aluminium
- c) An eutectoid steel consists of
 - (A) Only pearlite
 - (B) Only austenite
 - (C) Pearlite and ferrite
 - (D) Pearlite and cementite
- d) Cast iron is a
 - (A) Ductile material
 - (B) Malleable material
 - (C) Brittle material
 - (D) Tough material
- e) The hardness is the property of a material due to which it
 - (A) can be drawn into wires
 - (B) breaks with little permanent distortion
 - (C) can cut another metal
 - (D) can be rolled into thin sheets
- f) The percentage of Carbon in cast iron varies from



- (A) 0.1 to 0.5
(B) 0.5 to 1
(C) 1 to 1.2
(D) 1.2 to 4.43
- g)** Brass is an alloy of
(A) copper and zinc
(B) copper and tin
(C) copper, tin, zinc
(D) all of above
- h)** A material is called Allotropic, if it has
(A) fixed temperature
(B) different crystal structure at different temperatures
(C) atoms in random pattern
(D) none of above
- i)** The steel is normalized to
(A) to increase yield point
(B) to decrease ductility
(C) to increase ultimate tensile strength
(D) all of above
- j)** Carbon content in steels affects
(A) Hardness
(B) Melting point
(C) Machinability
(D) all of above
- k)** Number of atoms in a BCC unit cell are
(A) 2
(B) 4
(C) 6
(D) 8
- l)** Which of following is not a point type of defect?
(A) vacancies
(B) tilt boundaries
(C) interstitials
(D) impurities
- m)** Lead brass is not used for
(A) Keys
(B) Gears
(C) Bearing
(D) Valve parts
- n)** What is the full form of AISI?
(A) African Information Society Initiative
(B) American Iron and Steel Institute
(C) Automotive Industry Support Initiative
(D) Aerospace Industry Support Initiative



Attempt any four questions from Q-2 to Q-8

- Q-2** (a) Draw a neat and labeled sketch of Iron Carbon equilibrium diagram and explain the solidification of 1.2 % carbon steel. 7
(b) Write a note on substitutional type of solid solution. 7
- Q-3** (a) Give the characteristics of Malleable Cast Iron. 7
(b) What do you mean by the term Bearing metal? Give important features and application of the same. 7
- Q-4** (a) Write a short note on “technological properties of metals and alloys. 5
(b) Differentiate between primary and secondary bodings in solid. 5
(c) Define the terms (i) Ductility (ii) Malleability 4
- Q-5** (a) Draw a neat sketch of HCP unit cell, show the relation of axis and angles and give two examples for the same. 5
(b) Discuss the advantages and limitations of normalizing treatment. 5
(c) Compare and differentiate Edge and Screw dislocation. 4
- Q-6** (a) Write a short note on X-ray radiography test. 5
(b) Write a short note on Jominy end quench test showing all necessary figures. 5
(c) Write a short note on Spark test. 4
- Q-7** (a) Explain with neat sketch and effect of different cooling rates using TTT diagram. 7
(b) Write a note on Cu-Ni type of equilibrium diagram. 7
- Q-8** (a) List the secondary operations of powder metallurgical process and explain infiltration process. 7
(b) How does the metal powder characterization can be done in PM processes? Explain. 7

