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(Following Paper ID and Roll No. to be filled in your Answer Book)

Paper ID :140301 Roll No. | | | | | | | | | | |

B.Tech.

(SEM. III) THEORY EXAMINATION, 2015-16

MATERIAL SCIENCE

[Time:3 hours] [Maximum Marks:100]

Section-A

1. Attempt **all** parts. All parts carry equal marks. Write answer of each part in short. (2×10=20)

(a) What is the importance of the materials explain briefly.

(b) Why Yield points occurs in low Carbon steel.

(c) Classify different type of chemical bonds with appropriate examples.

(d) Write the name of all atomic models and explain any one on them.

(e) Differentiate between Edge dislocation and Screw dislocation.

(f) Why Etchant is used after polishing. Write etchant name for Stainless steel.

(g) Explain smart materials & its application.

(h) What is duralumin? Give the composition & their applications.

(i) Explain the diffeence between Addition polymerization and Condensation polymerization.

(j) A hardened steel ball of 0.50 cm diameter is used to indent a steel specimen in Brinell hardness test. Diameter of indentation measured by an optical microscope of magnification 10 X is observed to be 32.5mm Calculate Brinell hardness number of the steel specimen.

Section-B

Attempt **any five** questions from this section. (10×5=50)

2. Compare the microstructure of M.S.C.I, and which material will be more corrosion resistance and why?

3. Explain in brief Creep test and what is its importance.

4. Why does the electrical conductivity of intrinsic sillicon & germanium increases with increasing temperature?

5. Write main difference between thermoplastics and thermosets with example.

6. What you understand by lever rule, Determine the mass fraction of the phases present at 184° C in a sample of lead & tin with 45% tin in it.

7. Discuss effects of alloying elements on the properties of steel?

8. Explain Austempering and Martempering process with suitable sketch.

9. What are some method by which processing of ceramic materials in carried out? What are the applicaations of ceramic materials?

Section-C

Attempt **any two** questions from this section. (15×2=30)

10. Draw iron-carbon equilibrium diagram, and show their salient features. Indicate significance of this diagram for heat treatment of steel.

11. What is super conductivity and super conducting transition temperature? Explain what is Messier effect shown by super-conduction material & what are its possible uses?

12. Shown by graph Brittle & Ductile fracture of materials, Explain in brief Griffith's Theory of Brittle fracture.

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