

01814

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2011

ET-204 (A) : MATERIALS SCIENCE

Time : 3 hours

Maximum Marks : 70

Note : *Answer any seven questions. All questions carry equal marks.*

1. (a) Discuss the different methods of classification of Engineering materials. And explain how classification is a tool to aid in proper selection of materials. 5
- (b) Draw stress-strain curve for mild steel rod and show the different characteristic points on it. 5
2. (a) Write about the metallic bond between two dissimilar elements. 5
- (b) Define the term "co-ordination number". What is the significance of co-ordination number ? 5
3. (a) Explain the special features of three types of lattice in cubic crystals. 5

- (b) Draw a neat sketch of BCC crystal structure and calculate its packing factor and find out the effective number of atoms. 5
4. (a) Define "phase". What different kinds of phases are possible and how this can be ascertained by the phase rule ? 5
- (b) What are the applications of phase diagram ? 5
5. (a) What is understood by visco-elastic deformation ? Name the materials which exhibit visco-elastic behaviour. 5
- (b) What do you mean by isotropy and anisotropy ? 5
6. (a) Explain about Burger's Circuit. 5
- (b) Bring out differences between edge dislocation and mixed dislocation. 5
7. (a) Define the term thermal conductivity and explain its significance. 5
- (b) What are semi-conductors ? Explain different types of semi-conductors. 5
8. (a) Explain Griffith Theory on brittle materials. 5
- (b) A piece of copper originally 305 mm long is pulled in tension with a stress of 276 MPa. If the deformation is entirely elastic, what will be the resultant elongation ?
E for copper : 11.0×10^4 MPa 5

9. (a) What is weld ability ? Explain with neat sketch. 5
- (b) Describe the precipitation Hardening with example. 5
10. (a) Explain in brief the atmospheric degradation on metals. 5
- (b) Discuss the effect of Mechanical Stresses on corrosion. 5
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