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ET-204(A)

01085

B.Tech. Civil (Construction Management)

Term-End Examination

June, 2012

ET-204 (A) : MATERIALS SCIENCE

Time : 3 hours *Maximum Marks : 70*

Note : *Answer **any seven** questions.*
Use of calculator is permitted.

1. (a) Distinguish between metals and alloys. **5**

(b) Explain recyclability with examples ? **5**

2. (a) In a cubic crystal what is the degeneracy of the state 3, 2, 1. **5**

(b) Explain the terms semi-conductors and Insulators on the basis of energy bond theory. **5**

3. Write short notes on : **10**

(a) Unit cell

(b) Bravais Lattices

(c) Packing fraction

(d) Co-ordination number

(e) Miller indices

4. (a) Explain Lever rule with the help of a neat diagram. **5**

(b) Draw the Iron-Iron Carbide phase diagram and represent salient points with regard to temperature and composition. 5

5. Discuss edge dislocation and screw dislocation. Explain signification of Berger's Vector. 10

6. (a) State Hooke's law and define the terms involved in it ? 5
(b) What are the characteristics of Twinning ? 5

7. (a) Describe electron hopping. 5
(b) What is Meissere's effect ? Explain. 5

8. A cylindrical specimen of steel having an original diameter of 12.8 mm is tensile tested to fracture and found to have an engineering fracture strength of 460 MPa. If its cross-sectional diameter at fracture is 10.7 mm ; determine. 10
(a) The ductility in terms of percent area reduction, and
(b) The true stress at fracture.

9. Explain Griffith's theory of fracture mechanism. 10

10. Write short note on the following : 10
(a) Electro Chemical Cell
(b) Degradation of Polimors