

**B.Tech. Civil (Construction Management)**

00203

**Term-End Examination**

**December, 2018**

**ET-204(A) : MATERIALS SCIENCE**

*Time : 3 hours*

*Maximum Marks : 70*

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*Note : Answer any seven questions. All questions carry equal marks. Use of calculator is permitted.*

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1. (a) Distinguish between amorphous and crystalline substances. Can the same material exist in amorphous and crystalline state ? Give examples if so. 5
- (b) Distinguish between alloy and metal. Give at least four examples. 5
2. List out various bonds in solids and explain them with one example of each. 10

3. (a) Explain the principle and method of experiment to determine crystal structure using X-ray technique. 5
- (b) Distinguish between normal and inverse spinel structure. Can a compound show either of these structures? 5
4. (a) Explain the Lever Rule with examples. 5
- (b) Describe eutectic and peritectic reactions. 5
5. (a) Explain edge dislocation and screw dislocation with sketches. 5
- (b) What is Burgers vector? What is its significance? Explain with the help of neat sketches. 5
6. (a) Explain plastic deformation and elastic deformation with suitable examples. 5
- (b) Explain the theory of dislocation used to describe slip. 5
7. (a) Discuss band theory to explain the concept of semiconductor. 5
- (b) Distinguish between intrinsic and extrinsic semiconductors. 5

8. Explain the Griffith theory in detail. 10
9. (a) What is a TTT diagram ? What is its significance in Material Science ? What are its advantages ? 5
- (b) Explain the terms Martempering and Austempering. 5
10. Write short notes on the following : 5+5
- (a) Electrochemical Cell
- (b) Atmospheric Degradation
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