

MMMD-103**M.E./M.Tech. I Semester**

Examination, December 2012

Material Science*Time : Three Hours**Maximum Marks : 70*

Note: Attempt any five questions. All questions carries equal marks.

1. Describe the following imperfections in detail with sketches:-

- | | |
|----------------------|-----------------------|
| i) Zero dimensional | ii) One dimensional |
| iii) Two dimensional | iv) Three dimensional |

2. Explain semiconductors in detail also explain with neat sketches the following terms associated to semiconductors:-

- Intrinsic semiconductors
- Extrinsic semiconductors
- n-type crystal
- p-type crystal



3. Explain the terms related to deformation of metals:-

- | | |
|-------------------------|---------------------------|
| i) Strain hardening | ii) Work hardening effect |
| iii) Bauschinger effect | iv) Griffith's theory |

4. Explain in detail with the aid of sketch about the following points:-

- Formation of pearlite

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- Formation of martensite
- Hot working techniques

5. Write an essay about "ceramic material" with respect to:-

- Composition
- Crystal structure
- Electrical and mechanical properties

6. a) What is the difference between configuration and conformation in relation to polymer chains?

b) Write about the fracture toughness with neat diagram.

7. Classify the crystal on the basis of types of bond. Also draw the table on the basis of following heads:-

- Crystal type with example
- Binding force
- Units that occupy lattice sites
- Properties hardness brittleness, melting point, electrical conductivity

8. Write short notes on the following terms:-

- Advanced ceramic 2
- Relaxation time 2
- Strain aging and strain rate 2
- Dislocation phenomenon 2


