

B.Tech. Fifth Semester (Chemical Engineering) (CGS)  
**10156 : Material Science & Engineering : 5 CH 04**

P. Pages : 2

Time : Three Hours

**AW - 3148**

Max. Marks : 80

- Notes :
1. Answer **Three** question from Section A and **Three** question from Section B.
  2. Due credit will be given to neatness and adequate dimensions.
  3. Diagrams and chemical equations should be given wherever necessary.
  4. Illustrate your answer necessary with the help of neat sketches.
  5. Discuss the reaction, mechanism wherever necessary.
  6. Use of pen Blue/Black ink/refill only for writing the answer book.

**SECTION - A**

1. a) Why this subject is introduced in every branch of engineering? Give its significance. 7  
b) Discuss the classification of engineering materials in detail. 6

**OR**

2. a) Name the methods introduce to determine mechanical properties of engineering materials. 7  
b) Discuss the following :- 6
  - i) Poisson's Ratio
  - ii) Elastic limit
  - iii) Hook's law
  - iv) Shear stress & strain
  - v) Stress & strain.
3. a) Describe destructive and non-destructive test carried out for materials. 7  
b) Discuss in detail with neat sketch. 6
  - i) HCP
  - ii) FCC &
  - iii) BCC

**OR**

4. a) What is crystal structure? Discuss non-crystalline and crystalline structure of materials in detail with neat sketch. 8  
b) Discuss bonding in detail with its type. 5
5. Describe construction and principle working process of a Blast furnace? 14

**OR**

6. a) Why Aluminium and its Alloys are important in engineering application? Discuss in detail any two Aluminium alloys in detail. 8  
b) Discuss non-ferrous materials & its alloys in detail any two. 6

7. Describe corrosion, with its factor influencing? State various type of corrosion & methods to control and prevent corrosion. 14

**OR**

8. a) State the classification of corrosion. 4  
b) Discuss the various factors affecting corrosion. 3  
c) Describe two types of chemical corrosion that occurs. 7
9. a) Explain term polymer & discuss it's classification on basis of availability, structure, regularity & Thermal property. 8  
b) Nylon & Teflon are called as engineering plastics why? 5

**OR**

10. a) What do you mean by polymer composites? Discuss role of ingredients used in making of polymer composites give examples of polymer composites. 8  
b) Explain with neat sketch Hand lay-up technique of making (FRP) sheet. 5
11. a) Define ceramic Materials? Discuss functional & structural classification of ceramics. 7  
b) Discuss advance ceramics give its characteristics & uses in detail. 6

**OR**

12. Define glass? Give it's classification & properties in detail? State any five special type of glass in detail. 13

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