

AQ – 2744

Second Semester M. Tech. (Membrane and Separation Tech.) Examination

**ADVANCED MATERIAL TECHNOLOGY**

2 MST 3

P. Pages : 2

Time : Three Hours ]

[ Max. Marks : 80

- Note :** (1) All question carry marks as indicated.  
(2) Answer any **six** questions.  
(3) Assume suitable data wherever necessary.  
(4) Diagrams and Chemicals equations should be given wherever necessary.  
(5) Illustrate your answer wherever necessary with the help of neat sketches.  
(6) Use of slide rule logarithmic tables, Steam tables, Moller's Chart, Drawing instrument, Thermodynamic table for moist air, Psychrometric Charts and Refrigeration charts is permitted.  
(7) Use pen of Blue/Black ink/refill only for writing the answer book.

1. Explain the difference between hexagonal closed packed (HCP) and face centered cubic (FCC) structure of metals. 13
2. Why is it necessary to carry out thermal treatment of ceramics ? Explain their electrical and mechanical properties ? 13
3. What are the various techniques of heat treatment of materials ? Explain any one in details. 13
4. What are the various corrosion protection techniques and discuss in detail the cathodic protection system with its salient features ? 13
5. What are the various materials of construction for handling of specific chemicals ? Also discuss the essential properties of pipe coating. 13

6. Distinguish between :—
- (i) Crystalline and amorphous polymers
  - (ii) Isotactic, syndiotactic and atactic polymers
  - (iii) Linear, Branched and crosslinked polymers. 14
7. What are various components of polymer composites ? Explain any one method of manufacture of polymer composite. State the applications of composites. 14
8. Explain structure, properties and applications of
- (i) B. O. P. P.
  - (ii) Fire retardant polymeric materials. 13
9. What are polymer Blends and Alloys ? Explain any one type of polymer Alloys for engineering applications. 13
10. Explain structure, properties and applications of
- (i) Nylons
  - (ii) Polycarbonate
  - (iii) P. V. C. 13

