



- Notes :
1. Answer **Six** questions.
  2. Question No. **one** is compulsory & attempt **any five** out of remaining Nine questions.
  3. Due credit will be given to neatness and adequate dimensions.
  4. Diagrams and Chemicals equations should be given wherever necessary.
  5. Illustrate your answer necessary with the help of neat sketches.
  6. Discuss the reaction, mechanism wherever necessary.
  7. Cell phones are not permitted.
  8. Use of pen Blue/Black ink/refill only for writing the answer book.

1. a) Discuss various types of refractory materials. 5  
 b) Discuss preparation method, properties and uses of polypropylene material. 10
2. a) Define rheology of polymer. Discuss cone and plate type viscometer used for determination of rheological properties of polymer in detail with the help of schematic diagram. 8  
 b) Discuss test procedure and physical significance of Tensile strength property of polymer. 5
3. a) What is effect of cooling and heating on structure of metals? Discuss in brief. 7  
 b) Discuss advances in alloy steel. 6
4. a) What is polymer composite? Discuss the role and contribution of different components or constituents which are used in polymer composite preparation. 7  
 b) Explain various applications of polymer composites in the field of aerospace and marine field. 6
5. a) Compare open molding process with close molding process which are used in composites preparation. 6  
 b) How would you prepare styrene-Butadiene-Rubber (SBR)? Discuss with the help of flow sheet in detail. 7
6. a) Discuss stress strain curve which is used for determination of stress characteristics. 6  
 b) What are different types of natural reinforcements? Discuss its use in polymer composites preparation. 7
7. a) What are the barrier properties consider while selection of flexible polyethylene film in dairy products packaging? 6  
 b) How would you prepare multilayer plastics (polyolefins) film using coextrusion process? 7

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| 8.  | a) | What are different types of flame retardant polymers? Discuss any one in detail.                                      | 7  |
|     | b) | Explain shrink plastic film used in different entity packaging.   | 6  |
| 9.  | a) | What is polymer blend? Differentiate between compatible and incompatible polymer blend with suitable examples.        | 5  |
|     | b) | Discuss preparation and properties of PVC plus polycarbonate type polymer blend. Write down its any two applications. | 8  |
| 10. |    | Discuss in detail glass lining and FRP lining equipments used in chemical industries.                                 | 13 |

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