Unique Paper Code : 32177902

Name of the Paper : DSE-2: Inorganic Materials of Industrial Importance

Name of the Course : B.Sc. Prog

Semester : V

Duration : 3 hours

Maximum Marks : 75

Instructions for the Candidates

Attempt **four** questions in all. **All** questions carry equal marks

1. a) Describe briefly the principle, working and applications of the Li ion battery.
   b) What is meant by 'catalytic efficiency' and 'lifetime of a catalyst'? What is 'turnover number'?
   c) Why is it important to prepare the surface before beginning electroplating? What are the different methods by which the surface is prepared?

   (6, 6, 6.75)

2. a) Mention the functions of the following additives in a paint formulation.
      i) Emulsifying agent
      ii) Anti-skinning agent
      iii) Plasticizer
   b) What is 'glazing' in the context of ceramics? What are the advantages of glazing? Mention two methods of glazing.
   c) What are Ammonium phosphates? Describe its manufacture and its importance as plant nutrient?

   (6, 6, 6.75)

3. a) What is a battery? Differentiate between primary and secondary batteries.
   b) What are zeolites? Give examples. Why are natural zeolites not preferred as catalysts for commercial applications?
   c) What is Portland cement? What are the raw materials used in its manufacture? Briefly describe how it is manufactured.

   (6, 6, 6.75)

4. (a) Differentiate between drying oils, semi-drying oils and non-drying oils.
   (b) What are rocket propellants? Discuss their classification.
   (c) i) What are ceramics? How are they classified on the basis of their properties and applications?

ii) What are carbon nanotubes? Briefly describe the different types of carbon nanotubes and their uses.

(6, 6, 6.75)

5. (a) Discuss electroless plating with an example. What are its advantages and disadvantages compared to electroplating?
   (b) Give the composition and applications of the following kinds of glass:
      i) Borosilicate Glass
      ii) Safety Glass
   (c) Why do we need fertilizers for our crops? How can they be classified on the basis of their application?

(6, 6, 6.75)

6. (a) i) Explain the difference between Varnish and Lacquer
      ii) What is the role of a pigment in a typical paint formulation?
   (b) i) What are the requisites of explosives?
      ii) What precautions should be taken during the storage of explosives?
   (c) i) Discuss the role of Gypsum in manufacturing process of cement.
      ii) Discuss the importance of 'annealing' in the manufacture of glass.

(6, 6, 6.75)