

This question paper contains 3 printed pages]

Roll No. 

--	--	--	--	--	--	--	--	--	--	--	--

S. No. of Question Paper : 5693

Unique Paper Code : 2173012007

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

Name of the Course : B.Sc. (Hons.) Chemistry

Semester : IV

Duration : 3 Hours

Maximum Marks : 90

*(Write your Roll No. on the top immediately on receipt of this question paper.)*

Attempt any six questions.

All questions carry equal marks.

1. (a) Describe the principle and working of a hydrogen fuel cell. Also, list the essential characteristics of an ideal battery.  
(b) Explain the manufacturing of Portland cement.  
(c) What are carbon nanotubes ? Classify them. 5,5,5
2. (a) Differentiate between P.V.C. and C.P.V.C., concepts for modern paint formulator.  
(b) Highlight the industrial application of borosilicate glasses and safety glasses.

P.T.O.

- (c) What are lithium polymer (Li-Po) batteries ? Compare their features with conventional lithium-ion (Li-ion) batteries. 5,5,5
3. (a) What are fire retardant paints and heat-resistant paints ? What are their industrial applications ?
- (b) Explain the environmental consequences of long-term use of chemical fertilizers.
- (c) Discuss the chemical reactions and condition required for the electroless nickel plating on surface. 5,5,5
4. (a) Describe mixed fertilisers. What are the key advantages and disadvantages associated with their use ?
- (b) Draw a labelled electrolytic cell diagram for electroplating.
- (c) Write short notes on any *two* :
- (i) Galvanising
- (ii) Sherardizing
- (iii) Nitriding. 5,5,5
5. (a) What is glass wool and its industrial importance ?
- (b) Give an insight on the application of nano materials.
- (c) Differentiate between pozzolana cement and quick setting cement. 5,5,5
6. (a) Explain the working principles and real-world applications of Solar cell.

- (b) Discuss the manufacturing processes, physical and chemical properties and agricultural applications of Ammonium phosphates.
- (c) Describe the role of vehicle constituent of paint. 5,5,5
7. (a) Distinguish between direct and indirect fertilizers with suitable examples.
- (c) What are major causes for failure of paint film ? How can it be prevented ?
- (c) Explain, through flowchart, the sequence of changes during setting and hardening of paints. 5,5,5
8. (a) Discuss the advantage, uses and demerits of distempers.
- (b) Give chemical reaction involved in drying of oil.
- (c) Briefly explain the process of plating. What is condition for electroplating of chromium ? 5,5,5