

M.Sc. - I (Chemistry) (NEP Pattern) Semester-II  
**02MSCCH05 - Elective Paper-IV : Inorganic Materials of Industrial Importance**

P. Pages : 2

Time : Three Hours



**GUG/S/25/15354**

Max. Marks : 80

- Notes :
1. All five questions are compulsory and carry equal marks.
  2. Write chemical equation and draw diagram wherever necessary.

1. a) Define glass. Explain the key processes involved in the manufacture of glass. 8
- b) What is cement? Explain Manufacture of cement and setting process. 8

**OR**

- c) Explain the composition and properties of soda lime glass and armoured glass. 4
- d) Write a note on high technology ceramics and their applications. 4
- e) What is the role of superconducting and semiconducting oxides in modern technology? 4
- f) Explain the terms "nanotubes" and "carbon fibres." 4
2. a) Define fertilizers. Discuss the manufacturing process of Urea and Ammonium phosphate fertilizers. 8
- b) What is mean by preliminary treatment of Surface? Write the classification of surface coating. 8

**OR**

- c) Explain the different types of fertilizers and their uses in agriculture. 4
- d) Discuss : (i) Fire Retardant (ii) Emulsifying agent. 4
- e) Write a note on metallic coating. 4
- f) Describe eco-friendly paints and their environmental benefits. 4
3. a) Differentiate between primary and secondary batteries. Explain the working principles of Lithium-ion batteries and Solar Cells. 8
- b) Describe the detailed process of steel manufacturing, focusing on the removal of impurities. 8

**OR**

- c) Discuss the characteristics of batteries and their importance in modern technologies. 4
- d) Explain the components of a battery and their functions in storing and discharging energy. 4

- e) Explain the processes of decarbonisation and desulphurization in industrial settings. 4
- f) Explain the terms argon treatment and heat treatment. 4
- 4. a) Define a catalyst and explain its general principles. Discuss the deactivation and regeneration of catalysts, using enzymes as an example of natural catalysts. 8
- b) Define chemical explosives. Discuss the preparation, properties, and uses of Cyclonite (RDX). 8

**OR**

- c) Explain the application of Zeolites as catalysts. 4
- d) Compare the activity and reactivity of man-made catalyst and enzymes. 4
- e) Explain the Haber's catalytic process with chemical equation. 4
- f) Briefly explain the types and applications of rocket propellants. 4
- 5. a) Write ingredients of Portland cement. 2
- b) Write the applications of fullerene. 2
- c) Define potassium chloride fertilizer and explain its agricultural importance. 2
- d) Define an fillers & thinner and given an example. 2
- e) Explain the importance of polymer cells in modern technology. 2
- f) Explain Dephosphorisation. 2
- g) What are the phase transfer catalyst. 2
- h) Define Leadazide and discuss its applications in industry. 2

\*\*\*\*\*