

2023
B.A./B.Sc.
Sixth Semester
DISCIPLINE SPECIFIC ELECTIVE – 4
CHEMISTRY
Course Code: CHD 6.21
(Inorganic Materials of Industrial Importance)

Total Mark: 70

Pass Mark: 28

Time: 3 hours

Answer five questions, taking one from each unit.

UNIT-I

1. (a) Explain the setting and hardening of cement. 5
(b) Write short notes on superconducting and semiconducting oxides. 4
(c) Give the main raw materials for pottery ceramics and explain how it is manufactured. 5
2. (a) What are silicates and how are they classified? 1+4=5
(b) Write short notes on the following: 2×2=4
(i) Soda-lime glass (ii) Lead glass
(c) Give the composition, properties and uses of fluorosilicate. 5

UNIT-II

3. (a) Give the preparation and uses of KCl fertilizer. 4
(b) What are lead-batteries? Illustrate with the help of a neat diagram. 1+4=5
(c) How is ammonium phosphate fertilizer prepared? 5
4. (a) Differentiate between primary and secondary batteries with examples. 4
(b) Discuss the calcium ammonium nitrate (CAN) fertilizer in detail. 5
(c) Explain the working principle of a fuel cell. 5

UNIT-III

5. (a) What are emulsion paints and how are they classified? 1+3=4

- (b) What is surface coating? Explain plating and vapor deposition process. 1+4=5
- (c) Give an account of the following: 2½×2=5
- (i) Anodizing (ii) Water and oil paints
6. (a) Write short note on the following: 2×2=4
- (i) Pigments (ii) Enamels
- (b) Explain electroless-plating in detail. 5
- (c) What is a paint? Explain the heat retardant and plastic paints. 1+4=5

UNIT-IV

7. (a) What are alloys? How are they classified? 1+3=4
- (b) Write the various reactions involved for removal of impurities in the manufacture of steel. 5
- (c) Mention the properties and uses of the following: 5
- (i) Vanadium (ii) Tungsten
- (iii) Manganese
8. (a) Give the composition, properties and uses of the following: 2×2=4
- (i) Brass (ii) Nichrome
- (b) Explain in detail the heat treatment method for metal surface. 5
- (c) Write an account on ferrous and non-ferrous alloys. 5

UNIT-V

9. (a) Write short notes on the following: 2×2=4
- (i) Deactivation of catalysts (ii) Phase transfer catalysts
- (b) Give the preparation and uses of the following compounds: 2×2=4
- (i) Lead azide (ii) PETN
- (c) Why are catalysts important in the industries? Give the application of zeolites as catalysts. 6
10. (a) What do you mean by rocket propellant? Give the requirements of a good propellant. 4
- (b) Discuss the catalytic steps involved in homogeneous and heterogeneous catalysis. 5
- (c) Explain the theories of catalysis. 5