

B.Sc. Semester - 5 (CBCS) Examination**Oct/Nov.- 2024 (Old Course)****INORGANIC AND INDUSTRIAL CHEMISTRY (CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
2. Figures to the right indicate marks.

- Que.1(A) Answer the following question. (04)
Write any four applications of Crystal Field Theory.
- Que.1(B) Answer any two questions out of three. (10)
1. Differentiate High spin and Low Spin Complexes.
2. Discuss the factors affecting Crystal Field Splitting Energy.
3. Explain Hybridization, Structure and Magnetic Momentum of any two ML_4 type complex.
- Que.2(A) Answer the following question. (04)
Write a note on IR Spectroscopy of Metal Nitrosyls.
- Que.2(B) Answer any two questions out of three. (10)
1. Discuss EAN and 18-electron rule in detail with two examples each.
2. Explain the structure of Dimanganese Decacarbonyl.
3. Describe preparation and properties of Sodium Nitroprusside and Brown-ring Complex.
- Que.3(A) Answer the following question. (04)
Write a note on Momentum Operator.
- Que.3(B) Answer any two questions out of three. (10)
1. Derive energy equation of particle in one Dimensional Box and define Zero-Point Energy.
2. Explain any ten raw materials used in the manufacture of Glass briefly.
3. Describe any five types of Glass in detail.
- Que.4(A) Answer the following question. (04)
Discuss the raw materials used in the manufacture of Portland Cement and write the function of ingredients of Cement.
- Que.4(B) Answer any two questions out of three. (10)
1. Write a note on setting and hardening of Portland cement along with all the chemical reactions involved.
2. Explain any ten properties of Cement in detail.
3. What is RCC? Write its advantages and uses. Explain decay and curing of concrete.
- Que.5(A) Answer the following question. (04)
Write nutrient function of Nitrogen, Phosphorous, Potassium and Calcium in plant growth.
- Que.5(B) Answer any two questions out of three. (10)
1. Discuss the manufacture of both Mono and Diammonium Phosphate with diagram.
2. Explain production of Urea from Ammonium Carbamate with diagram.
3. Describe any three Potassium Fertilizers in detail.
