

B.Sc. Semester - 5 (Remedial) (CBCS) Examination**Feb/Mar. -2021 (NEW COURSE)****Inorganic and Industrial Chemistry (Core)****Time: 1:30 Hours****Marks: 42****Instructions:**

1. Figures to the right indicate marks.
2. There are five questions in the question paper.
3. Answer any three of the following questions.

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- Q. 1 (A) Answer the following question. (04)
(1) Write note on Degeneracy.
- Q.1 (B) Answer the following questions. (Any two) (10)
(1) Discuss structure of $\text{Fe}(\text{CO})_5$.
(2) Explain normalization & orthogonality of wave function of the particle in one dimensional box.
(3) Discuss the usefulness of IR spectroscopy in the study of metal carbonyls.
- Q. 2 (A) Answer the following question. (04)
(1) Explain properties of cement.
- Q. 2 (B) Answer the following questions. (Any two) (10)
(1) Explain Sindri Process for the production of Ammonium Sulphate.
(2) Discuss different types of cement.
(3) Discuss manufacturing of normal super phosphate by Den process with flow diagram.
- Q. 3 (A) Answer the following question. (04)
(1) Differentiate High spin and Low spin complex with example.
- Q. 3 (B) Answer the following questions. (Any two) (10)
(1) Discuss splitting of d – orbitals in octahedral field with CFSE.
(2) Explain raw materials for manufacturing of glass.
(3) Discuss manufacturing of cotton seed oil by Expression method.
- Q. 4 (A) Answer the following question. (04)
(1) Write note on RCC.
- Q. 4 (B) Answer the following questions. (Any two) (10)
(1) Explain types of CO group in metal carbonyl.
(2) Explain role of micro nutrients in plant growth.
(3) Discuss factors affecting the crystal field splitting energy.
- Q. 5 (A) Answer the following question. (04)
(1) Write note on Iodine value.
- Q. 5 (B) Answer the following questions. (Any two) (10)
(1) Derive wave and energy equation for a particle moving in three dimensional box.
(2) Discuss setting and hardening of Portland cement with chemical reactions.
(3) Discuss different types of glass.
