

B.Sc. Semester - 6 (CBCS) Examination

March/April-2023 (NEW COURSE)

Inorganic and Industrial Chemistry (Core (New))

Time: 2:30 Hours

Marks: 70

Instructions:

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

Q.1(A) Answer the following question. (04)

Calculate Microstates for (i) 3_F and (ii) 4_G

Q.1(B) Answer the following questions. (Any Two) (10)

1. Find term symbols for (i) $[\text{Co}(\text{H}_2\text{O})_6]^{+2}$ (ii) $[\text{Cr}(\text{F})_6]^{-3}$
2. Explain Guoy's balance method with its limitations.
3. Derive the equation for diamagnetic moment.

Q.2(A) Answer the following question. (04)

Explain any Oxo Process for manufacture of anionic detergents.

Q.2(B) Answer the following questions. (Any Two) (10)

1. Explain Green house effect.
2. Explain: Continuous process of soap manufacturing.
3. Explain: CFC and ozone depletion.

Q.3(A) Answer the following question. (04)

Draw the full Orgel diagram of D-term splitting.

Q.3(B) Answer the following questions. (Any Two) (10)

1. What is Jahn Teller effect? Explain tetragonal distortion in octahedral complexes.
2. Give the synthesis, properties & use of (i) Bakelite and (ii) Nylon-6,6.
3. Explain: Free radical polymerization with mechanism.

Q.4(A) Answer the following question. (04)

Calculate Microstates for (i) $[\text{Ti}(\text{H}_2\text{O})_6]^{+2}$ (ii) $[\text{Cr}(\text{F})_6]^{-3}$

Q.4(B) Answer the following questions. (Any Two) (10)

1. Explain: Pigeon Hole diagram for P^2 orbital.
2. Explain:- Effect of temperature on paramagnetic, ferromagnetic and antiferromagnetic substances.
3. Explain: Types of Soaps.

Q.5(A) Answer the following question. (04)

Discuss the absorption spectrum of $[\text{Cu}(\text{H}_2\text{O})_6]^{2+}$.

Q.5(B) Answer the following questions. (Any Two) (10)

1. Discuss the Orgel diagram for d^3 and d^7 system in tetrahedral and octahedral ligand field.
2. Explain: Ziegler-Natta catalyst with suitable example.
3. Explain: photochemical smog.
