

B.Sc. Semester - 6 (CBCS) Examination
May/June-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.

- Q. 1 (A) Answer the following question. (04)**
 (1) Calculate Microstates and find term symbols for following molecules.
 a) $[\text{Co}(\text{H}_2\text{O})_6]^{+2}$ b) $[\text{Mn}(\text{H}_2\text{O})_6]^{+2}$ c) $[\text{Cr}(\text{H}_2\text{O})_6]^{+3}$ d) $[\text{NiCl}_4]^{-2}$
- Q. 1 (B) Answer the following questions. (Any two) (10)**
 (1) Explain Hole-pigeon diagram for p^2 -orbital.
 (2) Determine allowed term symbol for d^2 case with stability order.
 (3) Explain Gouy's balance method with its limitations.
- Q. 2 (A) Answer the following question. (04)**
 (1) Explain types of soap.
- Q. 2 (B) Answer the following questions. (Any two) (10)**
 (1) Explain Greenhouse effect.
 (2) Explain any two methods for manufacture of anionic detergents.
 (3) Explain CFC and ozone depletion.
- Q. 3 (A) Answer the following question. (04)**
 (1) What is Jahn Teller effect? Explain tetragonal distortion in octahedral and Square planar complexes in detail.
- Q. 3 (B) Answer the following questions. (Any two) (10)**
 (1) Discuss the absorption spectrum of $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$.
 (2) Give the synthesis, properties & use of (a) Bakelite and (b) Nylon-6.
 (3) Give the classification of polymers based on stereochemistry (tacticity).
- Q. 4 (A) Answer the following question. (04)**
 (1) Derive equation for diamagnetic moment.
- Q. 4 (B) Answer the following questions. (Any two) (10)**
 (1) Calculate detail microstate for d^2 orbital.
 (2) Explain chemically oxygen demand (COD) in detail with procedure.
 (3) Explain Addition and Condensation polymerization and explain in details about Free radical polymerization with mechanism.
- Q. 5 (A) Answer the following question. (04)**
 (1) Discuss the Orgel diagram for d^3 and d^7 system in tetrahedral and octahedral ligand field.
- Q. 5 (B) Answer the following questions. (Any two) (10)**
 (1) Explain splitting of spectral terms in P^2 case with energy diagram
 (2) Give the name of methods for manufacturing of soap and explain batch process in detail.
 (3) Give the synthesis, properties & use of (a) Teflon and (b) Nylon-6,6.
