

B.Sc. Semester - 6 (CBCS) Examination
March/April-2023 (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.

-
- Q.1(A) Answer the following question. (04)**
Find term symbols for $[\text{Ni}(\text{H}_2\text{O})_6]^{+2}$
- Q.1(B) Answer the following questions. (Any Two) (10)**
 1. Find term symbols and calculate microstates for $[\text{Cr}(\text{F})_6]^{-3}$
 2. Draw the energy splitting diagram for p^2 orbital.
 3. Draw the pigeon hole diagram for p^2 orbital.
- Q.2(A) Answer the following question. (04)**
Discuss the absorption spectrum of $[\text{Ni}(\text{H}_2\text{O})_6]^{2+}$.
- Q.2(B) Answer the following questions. (Any Two) (10)**
 1. What is Jahn Teller effect? Explain tetragonal distortion in octahedral complexes.
 2. Discuss the Orgel diagram for d^2 system in tetrahedral and octahedral ligand field.
 3. Draw the full Orgel diagram for F-term splitting.
- Q.3(A) Answer the following question. (04)**
Draw the diagram only for the effect of temperature on paramagnetic, ferromagnetic and anti-ferromagnetic substances.
- Q.3(B) Answer the following questions. (Any Two) (10)**
 1. Explain Guoy's balance method with its limitations.
 2. Explain: Manufacture of cotton seed oil by solvent extraction method.
 3. Explain: hydrogenation of oils by dry process.
- Q.4(A) Answer the following question. (04)**
Give the name only for any four types of soap.
- Q.4(B) Answer the following questions. (Any Two) (10)**
 1. Explain: Oxo process for manufacture of anionic detergent.
 2. Give the classification of surface active agents.
 3. Explain: batch process for manufacture of soap.
- Q.5(A) Answer the following question. (04)**
Give any four names of green house gases.
- Q.5(B) Answer the following questions. (Any Two) (10)**
 1. Explain: BOD determination.
 2. Explain: CFC and ozone depletion.
 3. Explain: Types of water pollution in detail.
