

B.Sc. Semester - 6 (CBCS) Examination

March/April -2020

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. (4)**
(1) Calculate Microstates in detail for p^2 -orbital.
- Q.1 (B) Answer the following questions. (Any two) (10)**
(1) Explain Hole-pigeon diagram for p^2 -orbital.
(2) Calculate the microstates and find Term Symbol for $[\text{Cr}(\text{H}_2\text{O})_6]^{3+}$.
(3) Determine the allowed spectral terms for d^2 -electronic configuration.
- Q. 2 (A) Answer the following question. (4)**
(1) Explain the splitting of d-orbitals in $[\text{Ni}(\text{CN})_4]^{2-}$.
- Q. 2 (B) Answer the following questions. (Any two) (10)**
(1) Discuss the absorption spectrum of aqueous solution of Cu^{2+} ion.
(2) Discuss the Orgel diagram for d^2 and d^8 system in tetrahedral and octahedral ligand field.
(3) What is Jahn Teller effect? Discuss in detail Jahn Teller in octahedral ligand field.
- Q. 3 (A) Answer the following question. (4)**
(1) Derive equation for diamagnetic moment.
- Q. 3 (B) Answer the following questions. (Any two) (10)**
(1) Explain manufacturing of cottonseed oil by solvent extraction method.
(2) Explain Guoy's balance method with its limitations.
(3) Explain Hydrogenation oil by wet process.
- Q. 4 (A) Answer the following question. (4)**
(1) Explain classification of surfactants.
- Q. 4 (B) Answer the following questions. (Any two) (10)**
(1) Give the name of methods for manufacturing of soap and explain continuous process in detail.
(2) What is anionic detergent ? Name methods of preparation of anionic detergent and discuss Welsh process in detail.
(3) Discuss in detail various types of soap.
- Q. 5 (A) Answer the following question. (4)**
(1) Explain chemically oxygen demand (COD) in detail with procedure.
- Q. 5 (B) Answer the following questions. (Any two) (10)**
(1) Write note on Green House Effect.
(2) Explain water pollution.
(3) Explain BOD in detail with procedure involved in it.
