

B.Sc. Semester - 6 (CBCS) Examination

April/May-2022 (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.

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- Q. 1 (A) Answer the following question. (4)**
Find term symbols for $[\text{Co}(\text{H}_2\text{O})_6]^{+2}$
- Q. 1 (B) Answer the following questions. (Any two) (10)**
(1) Find term symbols and calculate microstates for $[\text{Cr}(\text{H}_2\text{O})_6]^{+3}$
(2) Determine allowed term symbol for p^2 case with stability order.
(3) Draw the pigeon hole diagram for p^2 orbital.
- Q. 2 (A) Answer the following question. (4)**
Discuss the absorption spectrum of $[\text{Cu}(\text{H}_2\text{O})_6]^{2+}$.
- 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^3 system in tetrahedral and octahedral ligand field.
(3) Draw the full Orgel diagram for F-term splitting.
- Q. 3 (A) Answer the following question. (4)**
Draw the diagram only for the effect of temperature on paramagnetic, ferromagnetic and antiferromagnetic 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. (4)**
Give the name of 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. (4)**
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.
