647510 **BSCinoCC6010** **Seat No :_____**

B.Sc. Semester - 6 (*CBCS*) Examination
March/April-2024 (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 **$[Co(H_2O)_6]^{+2}$**

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

(1) Find term symbols and calculate microstates for **$[Fe(Cl)_6]^{-3}$**

(2) Draw the energy splitting diagram for p^2 orbital.

(3) Draw the pigeon hole diagram for d^1 orbital.

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

Discuss the absorption spectrum of $[Cu(H_2O)_6]^{2+}$.

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 & d^3 system in octahedral ligand field.

(3) Draw the full orgel diagram for D-term splitting.

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

Explain: Hydrogenation of oils by wet process.

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) Draw the diagram only for the effect of temperature on paramagnetic, ferromagnetic and anti-ferromagnetic substances.

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

Explain: The types of soap.

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

(1) Explain: Welsh process for manufacture of anionic detergent.

(2) Explain: (i) Cationic detergent & (ii) Amphoteric detergent

(3) Explain: Batch process for manufacture of soap.

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

Give the names of green house gases.

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

(1) Explain: CFC and ozone depletion.

(2) Explain: BOD determination.

(3) Explain: Green house effect.

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