DP-003-1016006   Seat No. _____

Third Year B. Sc. (Sem. VI) (CBCS) Examination

March - 2022

Chemistry : C-601

(Inorganic & Industrial Chemistry) (Old Course)

Faculty Code : 003

Subject Code : 1016006

Time : **2.30** Hours]   [Total Marks : **70**

Instructions : (1)   All the questions are compulsory.

(2)   Each question carries 14 marks.

1   (A)   Answer the following questions.   **4**

(1)   Define - Term Symbol.

(2)   What is spin multiplicity ?

(3)   Define - Multi electron system.

(4)   Give the formula to calculate Microstate.

(B)   Answer any one.   **2**

(1)   What is S-S Coupling ?

(2)   Define the spectral term. Give the representation of spectral term.

(C)   Answer any one.   **3**

(1)   Explain Hund's rules to decide the ground state spectal term.

(2)   Write about L-S coupling.

(D)   Answer any one.   **5**

(1)   Calculate the microstates for d^2 case.

(2)   Derive the spectral terms for p^2 case and decide ground state spectral term.

2 (A) Answer the following questions. **4**

      (1) What is Hole formalism ?

      (2) What is mixed orbital transition ?

      (3) Give the theories useful to explain transition metal spectra.

      (4) What is orgel diagram ?

  (B) Answer any one. **2**

      (1) Explain charge transfer transition.

      (2) Explain spherical charge symmetric and asymmetric structure of d orbitals.

  (C) Answer any one. **3**

      (1) Write on the splitting of d orbitals in square planner complxes.

      (2) Write short note - La Porte selection rules for transition metal spectra.

  (D) Answer any one. **5**

      (1) Discuss the John Teller theorem.

      (2) Discuss the absorption spectrum of Cu^{2+}.

3 (A) Answer the following questions. **4**

      (1) Define - Magnetic permeability.

      (2) What is Larmor Rotation ?

      (3) Which chemical is useful as solvent in solvent extraction method ?

      (4) Give the formula of Butyric acid.

  (B) Answer any one. **2**

      (1) Explain ferromagnetic & antoferromagnetic substances.

      (2) Define - Saponification value & Iodine value.

  (C) Answer any one. **3**

      (1) Write on effect temperature on magnetic properties.

      (2) Write about properties of oil & fats.

(D) Answer any one. **5**

 (1) Discuss the Gouy Balance method for magnetic susceptibility measurement.

 (2) Discuss solvent extraction method for cotton seed oil in detail.

4 (A) Answer the following questions. **4**

 (1) Define, Pollution.

 (2) What is Biosphere ?

 (3) Give the segments of environment.

 (4) What is CFC ?

 (B) Answer any one. **2**

 (1) Explain BOD & COD.

 (2) Explain briefly Ozone depletion.

 (C) Answer any one. **3**

 (1) Give short note - Acid Rain.

 (2) Write on Photo chemical smog.

 (D) Answer any one. **5**

 (1) What is Green House effect ? Discuss its causes.

 (2) Discuss the source of water pollution.

5 (A) Answer the following questions. **4**

 (1) What is Soap ?

 (2) Define Detergent.

 (3) Soap lowers the surface tension of water.- True or Faluse ?

 (4) Which metal is useful as catalyst in Oxo process ?

 (B) Answer any one. **2**

 (1) Write on Neem Soap.

 (2) Write short note - Shampoo.

(C) Answer any one. **3**

    (1) Write the classification of detergents.

    (2) Explain the Alfol process for the manufacturing of anionic detergent.

(D) Answer any one. **5**

    (1) Write in detail about raw materials used for soap manufacturing.

    (2) Discuss the recovery of glycerine from spent lye of soap.

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