



DCA-003-1012004

Seat No. _____

B. Sc. (Sem. II) (CBCS) (W.E.F. 2016) Examination

July - 2022

C-201 : Chemistry

(Old Course)

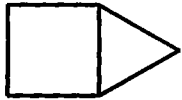
Faculty Code : 003

Subject Code : 1012004

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

- 1 (a) Answer the following questions. 4
- (1) Pure crystalline ionic solid is a _____ conductor of electric current.
(good, poor, moderate)
 - (2) Benzene is _____ solvent for NaCl.
(good, bad, moderate)
 - (3) Oxalate ion is _____ bidentate ligand.
 - (4) Define "ambidentate ligand"
- (b) Answer any one in brief : 2
- (1) What is "Schottky defects"?
 - (2) Which factors determine the coordination number of the central metal atom and geometry of compound?
- (c) Answer any one in detail : 3
- (1) Prove that "for triangular crystal structure, the limiting radius ratio r^+/r^- is 0.155.
 - (2) Explain geometrical isomerism for coordination number is 4.
- (d) Answer any one in detail : 5
- (1) Explain close packing vary of atoms in crystal structures, like HCP, FCC and BCC.
 - (2) Explain; "Werner's theory.

- 2 (a) Answer the following questions : 4
- (1) Give electronic configuration of Cu.
 - (2) What is steel?
 - (3) Graphite and diamond are examples of _____ solids.
 - (4) Which type of structure possessed by caesium chloride?
- (b) Answer any one in brief : 2
- (1) Why does "Mn" possess maximum number of oxidation state as compared to other transition metals of 3d-series?
 - (2) Give differences between "crystalline solids and amorphous solids".
- (c) Answer any one in detail : 3
- (1) Derive Bragg's equation.
 - (2) Write a short note on "catalytic properties" of elements of 3d-series.
- (d) Answer any one in detail : 5
- (1) Discuss magnetic property of (i) $[\text{NiCl}_4]^{2-}$ and (ii) $[\text{Ni}(\text{CN})_4]^{2-}$.
 - (2) Explain in detail : "Laws of Crystallography"
- 3 (a) Answer the following questions. 4
- (1) Draw structure of "3-ethyl cyclopentene-1".
 - (2) What is IUPAC name of
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- (3) Which product form when cyclopentane react with Br_2 ?
 - (4) Give conversion of cyclohexanol from phenol.

- (b) Answer any one in brief : 2
- (1) Cyclohexane is more stable than cyclopentane. Why?
 - (2) The cycloalkanes have the general formula _____. They have the same general formula as the _____.
(alkanes, alkenes, alkynes).
- (c) Answer any one in detail : 3
- (1) Write a note on "oxidation reactions of cycloalkanes".
 - (2) Explain Diel-Alder reaction.
- (d) Answer any one in detail : 5
- (1) Explain conformational analysis of ethane.
 - (2) Explain any three methods to prepare small ring cycloalkanes.
- 4 (a) Answer the following questions : 4
- (1) Which electrophile is formed during Fridel-Craft acylation?
 - (2) Give common increasing stability order of nonaromatic, antiaromatic and aromatic compounds having same number of carbons.
 - (3) Write Huckel's rule.
 - (4) What would be the product when benzene reacts with propene in presence of sulphuric acid?
- (b) Answer any one in brief : 2
- (1) "1, 3 Cyclobutadiene" is antiaromatic compound. How?
 - (2) Why benzene undergoes substitution reaction more easily than addition reaction?
- (c) Answer any one in detail : 3
- (1) Give the mechanism of "methylation of benzene".
 - (2) Explin mechanism of "nitration of benzene".

- (d) Answer any one in detail : 5
- (1) Discuss effect of activating and deactivating substituents on reactivity and orientation of aromatic substitution reaction.
 - (2) Explain the sulphonation of benzene with mechanism.
- 5 (a) Answer the following questions : 4
- (1) Which of the following is/are strong electrolyte/s?
 NH_4Cl , NaCl , H_2SO_4
 - (2) Define; "sparingly soluble salt".
 - (3) What is conjugated acid of NH_3 ?
 - (4) What would be the effect of aqueous solution of sodium acetate on litmus paper?
- (b) Answer any one in brief : 2
- (1) Give limitation of Arrhenius concept to define base.
 - (2) Give brief idea about ionic product of water.
- (c) Answer any one in detail : 3
- (1) Write a short note on "pH-scale".
 - (2) How does solution of $\text{CH}_3\text{COONH}_4$ act as a buffer solution?
- (d) Answer any one in detail : 5
- (1) Explain "Common ion effect" and its applications.
 - (2) Give mechanism of basic buffer solution and derive equation to calculate pH of basic buffer solution.
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