

[This question paper contains 6 printed pages.]

1366

Your Roll No.

B.Sc. (Hons.)/I

A

BIOCHEMISTRY : Paper-II

(Inorganic and Organic Chemistry)

(Admissions of 2000 and onwards)

Time : 3 Hours

Maximum Marks : 60

*(Write your Roll No. on the top immediately
on receipt of this question paper.)*

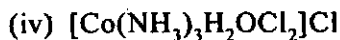
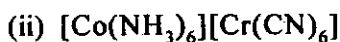
*Use separate answer books for Section A
and Section B. Attempt six questions in all,
selecting three questions from each Section.*

INORGANIC PART

Attempt any three questions from Section A.

SECTION A

1. (a) Write IUPAC names of the following complexes :



(4)

P.T.O.

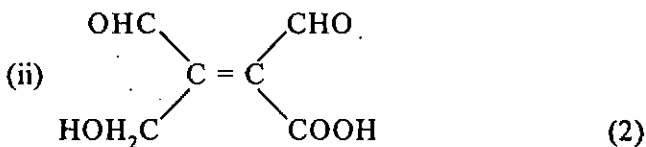
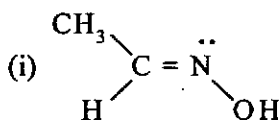
- (b) Write the formulae of the following complexes :
- (i) Ethylenediamminetetraacetate ion
 - (ii) Potassium trioxalatochromate(III)
 - (iii) Bromochlorotetraamminecobalt(III) chloride (3)
- (c) Give a brief account of Werner's Coordination theory. (3)
2. (a) On the basis of Valence Bond Theory, predict the nature of the following complexes and calculate their magnetic moment.
- (i) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
 - (ii) $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$
 - (iii) $\text{K}_4[\text{Fe}(\text{CN})_6]$ (6)
- (b) (i) In general ionic compounds are soluble in polar solvents. Explain. (2)
- (ii) Justify the statement that all ionic compounds are crystalline in nature but all crystalline compounds need not be ionic in nature. (2)
3. Write short notes on the following :
- (a) Born-Landé Equation (3)

- (b) Metalli bond (3)
- (c) Valence shell electron pair repulsion theory (4)
4. (a) Predict the shapes of the following molecules :
- (i) XeF_4
 - (ii) PCl_5
 - (iii) H_3BO_3
 - (iv) SF_6 (4)
- (b) Why HOH bond angle in water is more than that of HSH bond angle in hydrogen sulphide ? (2)
- (c) Calcium carbonate is an ionic compound, yet it is insoluble in water. Explain. (2)
- (d) What is inert pair effect and what are its consequences ? (2)

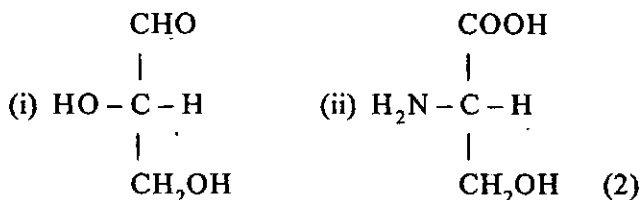
SECTION B

Answer any three.

1. (a) Fumaric acid is less soluble than Maleic acid, explain. (2)
- (b) Assign 'E' and 'Z' to the following :



(c) Assign 'R' and 'S' to the following :



(d) Outline the mechanism of Iodoform reaction.

(2)

(e) What do you understand by active methylene group? Explain giving suitable examples. (2)

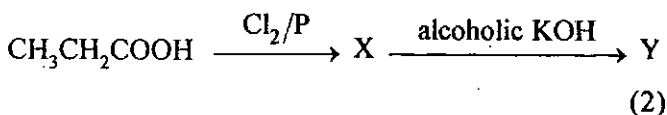
2. Give reasons for the following (any four)

(a) Alkenes are more reactive than alkynes towards Electrophilic addition.

(b) Cyclopropenyl cation is aromatic.

(c) o-nitrophenol is a weaker acid than p-nitrophenol.

- (d) Vinyl chloride is less reactive than ethyl chloride towards nucleophilic substitution.
- (e) Toluene is more reactive than ethyl-benzene towards electrophilic substitution. $(2\frac{1}{2} \times 4)$
3. (a) How will you convert acetaldehyde to lactic acid? (2)
- (b) What are the products formed when Benzaldehyde and formaldehyde are taken together in NaOH? (2)
- (c) Write the major product of dehydration of 3,3-dimethylbutan-2-ol with Conc H_2SO_4 . Give the mechanism involved. (2)
- (d) Identify X and Y and name the reaction for the formation of X



- (e) Give the products of ozonolysis of ortho-xylene. (2)
4. Write short notes on any four of the following :
- (a) Reimer Tiemann Reaction
- (b) Aldol Condensation

(c) Hyperconjugation

(d) SN^1 reactions

(e) Claisen Ester condensation

($2\frac{1}{2} \times 4$)