

[This question paper contains 5 printed pages]

Your Roll No

5797

J

B.Sc. (Hons.)/I

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

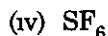
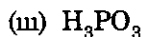
SECTION A

- 1 (a) Write IUPAC names of the following complexes 4
- (i) $K_3[Fe(CN)_6]$
 - (ii) $K_2[Ni(CN)_4]$
 - (iii) $[Cr(en)_3]Cl_3$
 - (iv) $[Pt(NH_3)_2Cl_4]$
- (b) Write the formulae of the following complexes 3
- (i) Potassium dicyanoargentate(I)

[P T O

- (ii) Trisoxalatochromium(III) chloride
- (iii) Sulphatotetraamminecobalt(III) nitrate
- (c) What is a ligand ? Give one example each of bidentate, tridentate and hexadentate ligand 3
- 2 (a) On the basis of VBT, predict whether the following compounds are paramagnetic or diamagnetic Calculate their magnetic moments also 6
- (i) $[\text{Co}(\text{NH}_3)_6]\text{Cl}_3$
- (ii) $[\text{Cr}(\text{H}_2\text{O})_6]\text{Cl}_3$
- (iii) $\text{K}_4[\text{Fe}(\text{CN})_6]$
- (b) What is isomerism ? How many types of isomerism are shown by co-ordination compounds ? Explain any two types of isomerism with the help of one example each 4
- 3 (a) Write short note on Fajan's rules 3
- (b) (i) Define Lattice Enthalpy
- (ii) Write Born-Lande equation and define the terms involved in it 3
- (c) Write short notes on Valence shell electron pair repulsion theory and explain the linear structure of BeCl_2 and pyramidal structure NH_3 4
- 4 Predict the shapes of the following molecules 4
- (a) (i) XeF_2
- (ii) NCl_3

(3)



(b) Explain the following 2 × 3

(i) Boiling point of *o*-nitrophenol is less than that of *p*-nitrophenol

(ii) Ionic compounds are crystalline in nature

(iii) HCl is a covalent compound but its aqueous solution is highly conducting in nature

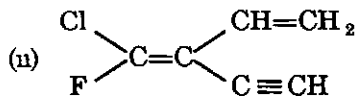
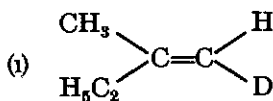
ORGANIC PART

Attempt any three questions from Section B

SECTION B

Answer any five questions

1 (a) Assign E and Z designation for the following . 2

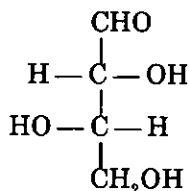


(b) The dipole moment of *trans* 1-chloropropene is higher than its *cis* isomer Explain 2

(c) Acetylacetone exists in the enol form more. Explain 2

[P T O

- (d) What is the difference between Enantiomers and Diastereomers ? 2
- (e) Assign 'R' and 'S' at both asymmetric carbons of the following 2



- 2 Give reasons for the following (Do *any four*) $2\frac{1}{2} \times 4$
- (a) Cycloheptatrienyl cation is aromatic
- (b) Chlorobenzene is less reactive than ethylchloride towards Nucleophilic substitution
- (c) $-\text{COOH}$ group is metadirecting towards electrophilic substitution
- (d) 2-Butene is more stable than 1-butene
- (e) Phenylacetaldehyde does not undergo Cannizzaro's reaction
- 3 (a) Give the structure of alkene that on ozonolysis give 2 moles of $\text{CH}_2=\text{O}$ and 1 mole of 2-oxopropanal 2
- (b) Give two chemical tests to distinguish $\text{CH}_3\text{CH}_2\text{CHO}$ from CH_3COCH_3 2

(5)

- (c) Explain acetaldehyde is more reactive than Benzaldehyde towards nucleophilic addition 2
- (d) Explain why phenol is more acidic than ethanol 2
- (e) What is the product of the reaction of Benzaldehyde and Propionaldehyde in NaOH ? 2
- 4 Write short notes on any *four* of the following 2½×4
- (a) Cannizzaro's reaction
 - (b) Hofmann Bromamide reaction
 - (c) Markownikov's rule
 - (d) Iodoform reaction
 - (e) Wurtz reaction

1957 年 12 月 1 日

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