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Answer Sheet No. 15

Sig. of Candidate. _____

Sig. of Invigilator. _____

CHEMISTRY HSSC-II

SECTION - A (Marks 17)

Time allowed: 25 Minutes

Revised Sallaybus

Version Number

1	7	2	6
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Note: Section - A is compulsory. All parts of this section are to be answered on the OMR Answer Sheet provided separately. It should be completed in the first 25 minutes and handed over to the Centre Superintendent along with the Question Paper. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Choose the correct answer A / B / C / D by filling the relevant bubble for each question on the OMR Answer Sheet according to the instructions given there.

- 1) Which of the following is correct decreasing order of bond length of Halogens?
A. $I_2 > Cl_2 > Br_2 > F_2$ B. $I_2 > Br_2 > Cl_2 > F_2$
C. $Br_2 > I_2 > Cl_2 > F_2$ D. $I_2 > Cl_2 > F_2 > Br_2$
- 2) What is the correct electronic configuration of Cr ? (Atomic number of Cr=24)
A. $[Ar]3d^4, 4s^2$ B. $[Ar]3d^5, 4s^1$ C. $[Ar]3d^1, 4s^2$ D. $[Ar]3d^3, 4s^1$
- 3) Which of the following is not an Organic compound?
A. HCO_2H B. H_2CO_3 C. $C_2H_5CO_2H$ D. $CH_3CO_2CH_3$
- 4) Acidic Hydrogen is present in:
A. Propyne B. Propene C. Propane D. 2-Butyne
- 5) Identify the Most stable carbocation among the following:
A. $\begin{array}{c} CH_3 \\ | \\ CH_3 - C^+ \\ | \\ CH_3 \end{array}$ B. $\begin{array}{c} CH_3 \\ | \\ CH_3 - CH - C^+H_2 \end{array}$ C. $CH_3 - \overset{+}{C}H_2$ D. $\begin{array}{c} CH_3 - \overset{+}{C}H \\ | \\ CH_3 \end{array}$
- 6) _____ are Sulfur analogues of Alcohols.
A. Alkenes B. Thiols C. Imines D. Amines
- 7) Which of the following will react with both Aldehydes and Ketones?
A. Grignard's reagent B. Tollen's reagent
C. Fehling's reagent D. Benedict's reagent
- 8) Which of the following order is correct regarding the acidity of carboxylic acids?
A. $CCl_3COOH > CHCl_2COOH > CH_2ClCOOH$
B. $CH_2ClCOOH > CHCl_2COOH > CCl_3COOH$
C. $CHCl_2COOH > CCl_3COOH > CH_2ClCOOH$
D. $CH_2ClCOOH > CCl_3COOH > CHClCOOH$
- 9) The secondary structure of protein is stabilized by:
A. Peptide bonds B. Van der Waals forces
C. Hydrogen bonds D. Dipole-dipole interactions
- 10) The dyes which have two or more $-N \equiv N-$ groups are called:
A. Azo dyes B. Nitro dyes
C. Nitroso dyes D. Triaryl methane dyes
- 11) Which of the following is NOT an Air pollutant?
A. SO_2 B. NO_2 C. CO D. CO_2
- 12) Infrared radiations are involved in:
A. NMR spectroscopy B. IR spectroscopy
C. UV spectroscopy D. Mass spectrometry
- 13) Which property increases going down the Group II A of Periodic Table?
A. Electronegativity B. Ionic radius
C. Maximum oxidation number D. Second ionisation energy
- 14) A Chiral Carbon is a Carbon which has _____ different group(s) attached with it.
A. 3 B. 2 C. 1 D. 4
- 15) Esterification is the reaction of _____ with an alcohol.
A. Amide B. Carboxylic acid C. Ester D. Amine
- 16) Which of the following compounds have no attraction at all with water?
A. C_6H_6 B. C_2H_5OH C. CH_3CH_2OH D. CH_3COOH
- 17) _____ is an example of disaccharides.
A. Glucose B. Galactose C. Sucrose D. Fructose

For Examiner's use only:

Total Marks:

17

Marks Obtained:

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CHEMISTRY HSSC-II

(Revised Syllabus)

16

Time allowed: 2:35 Hours

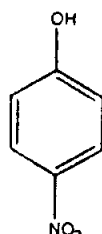
Total Marks Sections B and C: 68

NOTE: Sections B and C comprise pages 1 – 2. Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

SECTION – B (Marks 42)

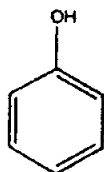
Q. 2 Answer any FOURTEEN parts. The answer to each part should not exceed 5 to 6 lines. (14 x 3 = 42)

- (i) Give reasons of the followings:
- Why alkali metals are stored in kerosene or paraffin oil? (1.5)
 - Halogens act as strong oxidizing agent. (1.5)
- (ii) Define the following terms with one example of each: (03)
- Ligand
 - Coordination sphere
 - Central metal atom or ion
- (iii) Write structures of each of the following compounds. Write correct IUPAC names if given ones are wrong. i) 2-Ethylpentane ii) 5-Ethyl-4-Methylheptane (1.5+1.5)
- (iv) How can sulphur be detected in an organic compound? Explain briefly with chemical equations. (1+2)
- (v) Differentiate between constitutional and stereo isomerism with examples. (03)
- (vi) Give methods of preparation of Alkyl Halids by using $SOCl_2$ and PX_3 . (03)
- (vii) Write down the reaction involved in the formation of quaternary ethyl ammonium iodide, starting from ethyl iodide. (03)
- (viii) What is Williamson synthesis? (03)
- (ix) Which of the following is more acidic? Justify your answer with brief explanation. (03)



Para Nitrophenol

OR



Phenol

- (x) Which of the products will be major product in the reaction given below? Explain briefly. (1+2)
- $$CH_3CH=CH_2 + HI \longrightarrow \underset{A}{CH_3CH_2CH_2I} + \underset{B}{CH_3CHICH_3}$$
- (xi) Give the mechanism of acid catalysed hydrolysis of amide. (03)
- (xii) How will you convert Benzene to meta nitro toluene. (03)
- (xiii) a. What is combustion analysis? (01)
- b. An unknown organic compound contains only Carbon, Hydrogen and Oxygen. On combustion analysis 17.471 gm of this compound produces 10.477 gm of H_2O and 25.612 gm of CO_2 . Determine mass of Hydrogen, Carbon and Oxygen present in this compound. (Atomic masses of C, O, H are 12, 16, 1 respectively) (02)
- (xiv) Write systematic names of the following: (03)
- $[Co(NH_3)_6]Cl_3$
 - $Na_3[CoF_6]$
 - $[Fe(H_2O)_6]^{2+}$
- (xv) Give preparation of Acetophenone from benzene with mechanism. (03)
- (xvi) Which of the following compounds would show aldol condensation and which would show Cannizzaro reaction? Write the structures of the expected products as well. (03)
- 2-Methylpentanal
 - Benzaldehyde

- (xvii) a. What are proteins? (01)
 b. Differentiate between primary and secondary structures of proteins. (02)
- (xviii) What are dyes? Give names of different types of dyes on the basis of chromophores present in their structure. (1+2)
- (xix) With the help of chemical equations, clarify the role of the following in depletion of Ozone. (1.5+1.5)
 i. Oxides of Nitrogen ii. Chlorofluorocarbons (CFCs)

SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

- Q. 3** a. Describe the acidic or basic nature of the following in detail. Support your answer with suitable chemical equations. (3.5+3.5)
 i. Na_2O ii. Cl_2O_7
- b. Explain why: (2+2+2)
 i. The solubility of alkaline earth metal hydroxide in water increases down the group.
 ii. The solubility of alkaline earth metal carbonates and sulphates in water decreases down the group.
 iii. Bond enthalpy of F_2 is less than Cl_2
- Q. 4** a. Give chemical reactions showing the preparation of each of the following. (Mechanisms are not required) (06)
 i. Cyanohydrin ii. Imine iii. Phenyl Hydrazone
 iv. Oxime v. Acetal vi. Metaformaldehyde
- b. Describe in detail the formation of 2 moles of acetone by ozonolysis of a suitable alkene. (03)
- c. An organic compound with the molecular formula $\text{C}_3\text{H}_6\text{O}$ forms 2,4-DNP derivative, does not reduce Tollens' reagent and undergoes Aldol condensation reaction. On oxidation, it gives mixture of acetic acid and formic acid. Identify the compound. (04)
- Q. 5** a. Describe the factors that affect the activity of enzymes. (06)
- b. Explain the following terms: (03+03)
 i. Acid rain ii. Green House Effect
- c. What is PAN? (01)

— 2HS 1709 —

Roll No.

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Answer Sheet No. 17

Sig. of Candidate. _____

Sig. of Invigilator. _____

CHEMISTRY HSSC-II

SECTION – A (Marks 17)

Time allowed: 25 Minutes

Old Syllabus

Version Number

1	7	9	6
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Note: Section – A is compulsory. All parts of this section are to be answered on the OMR Answer Sheet provided separately. It should be completed in the first 25 minutes and handed over to the Centre Superintendent along with the Question Paper. Deleting/overwriting is not allowed. Do not use lead pencil.

Q. 1 Choose the correct answer A / B / C / D by filling the relevant bubble for each question on the OMR Answer Sheet according to the instructions given there.

- 1) The element Caesium resembles with:
A. Ca B. Cr C. Co D. Sc
- 2) Keeping in view the sizes of atoms, which order is correct one:
A. $Mg > Sr$ B. $Ba > Mg$ C. $Li > Cs$ D. $Cl > I$
- 3) Tincal is a mineral of:
A. Aluminium B. Boron C. Silicon D. Carbon
- 4) Aluminium Oxide is:
A. Basic Oxide B. Acidic Oxide
C. Amphoteric Oxide D. Either acidic or basic
- 5) Laughing gas is chemically:
A. NO B. N_2O C. N_2O_3 D. NO_2
- 6) The anhydride of $HClO_4$ is:
A. Cl_2O_3 B. ClO_2 C. Cl_2O_5 D. Cl_2O_7
- 7) Which of the following is a non-typical transition element?
A. Cr B. Mn C. Zn D. Fe
- 8) Alcohol and ethers show the phenomenon of:
A. Position isomerism B. Metamerism
C. Functional group isomerism D. Cis-trans isomerism
- 9) Vinyl acetylene combines with HCl to form:
A. Polyacetylene B. Benzene C. Chloroprene D. Divinyl acetylene
- 10) Benzene cannot undergo:
A. Addition reaction B. Substitution reaction
C. Oxidation reaction D. Elimination reaction
- 11) $-CHO$ group in benzene is:
A. Ortho directing B. Meta directing C. Para directing D. Ortho & Para directing
- 12) For which mechanism, the first step involved is same:
A. E-1 and E-2 B. SN-1 and SN-2 C. E_1 and SN₁ D. E-2 and SN-2
- 13) Ketones are prepared by the Oxidation of:
A. Primary alcohol B. Secondary alcohol
C. carboxylic acids D. Aldehydes
- 14) The reagent which reacts both with Aldehydes and Ketones is:
A. Grignard's reagent B. Fehling's reagent
C. Tollen's reagent D. Benedict's reagent
- 15) Acetamide is prepared by:
A. Heating ammonium acetate B. Heating methyl cyanide
C. Heating ethyl acetate D. Hydrolysis of methyl cyanide
- 16) The reaction between fat and $NaOH$ is called:
A. Esterification B. Hydrogenation C. Saponification D. Fermentation
- 17) Newspaper can be recycled again and again _____ times:
A. 2 B. 3 C. 4 D. 5

For Examiner's use only:

Total Marks:

17

Marks Obtained:

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CHEMISTRY HSSC-II

(Old Syllabus)

18

Time allowed: 2:35 Hours

Total Marks Sections B and C: 68

NOTE: Sections B and C comprise pages 1 – 2. Answer any fourteen parts from Section 'B' and any two questions from Section 'C' on the separately provided answer book. Use supplementary answer sheet i.e. Sheet-B if required. Write your answers neatly and legibly.

SECTION – B (Marks 42)

Q. 2 Answer any FOURTEEN parts. The answer to each part should not exceed 5 to 6 lines. (14 x 3 = 42)

- (i) Ionization energy of noble gases is highest in their respective periods. Why? (03)
- (ii) What is meant by plaster of Paris? Discuss briefly its preparation and write down its two uses. (1+1+1)
- (iii) Define Weathering of rocks. Give balanced chemical equation involved in the conversion of feldspar into Kaolin clay. (01+02)
- (iv) How does Aluminium react with the following? (01+01+01)
- a) Chlorine b) Nitric acid (dilute) c) Caustic soda
- (v) Complete and balance the following reactions: (01+01+01)
- a) $H_3PO_3 + CuSO_4 + H_2O \longrightarrow$
- b) $P + HNO_3 \longrightarrow$
- c) $Pb(NO_3)_2 + H_2SO_4 \longrightarrow$
- (vi) Which halogen gas is used to kill bacteria in water treatment? Explain briefly by giving chemical equation. (01+02)
- (vii) How does the process of galvanization protect iron from rusting? (03)
- (viii) Define hybridization and identify hybridization of each under-lined carbon in following compounds: (01+02)
- a) $CH_3 - \underline{C} \begin{array}{c} O \\ || \end{array} - CH_3$ b) $CH_3 - CH_2 - \underline{C} \equiv N$
- c) $\underline{C}H_2 = NH$ d) $\underline{C}H_3 - \underline{C} \begin{array}{c} O \\ || \end{array} - OH$
- (ix) Give reaction mechanism for the conversion of Acetylene into acetaldehyde. (03)
- (x) Covert benzene to Benzal chloride. (03)
- (xi) Convert chloroethane into: (01+01+01)
- a) Ethyl nitrile b) Ethyl methyl ether c) Ethyl acetate
- (xii) Why is phenol an acid, while alcohol neutral, although both have hydroxyl (-OH) group in their compounds? (03)
- (xiii) Explain briefly industrial preparation of methanol with the help of flow chart diagram. (03)
- (xiv) Give equation and reaction mechanism for the conversion of Acetaldehyde to Acetaldehyde-cyanohydrin. (01+02)
- (xv) Differentiate between acetone and acetaldehyde by giving valid tests. (03)

- (xvi) How does amino acid act as acid as well as a base? Explain briefly by giving reactions. (1.5+1.5)
- (xvii) What are proteins and polypeptides? How are these related with one another? (02+01)
- (xviii) Define following two factors affecting quality of water; (1.5+1.5)
- a) B.O.D b) C.O.D
- (xix) Define paper. Draw flow-sheet diagram for its industrial preparation. (01+02)

SECTION – C (Marks 26)

Note: Attempt any TWO questions. All questions carry equal marks. (2 x 13 = 26)

- Q. 3**
- a. Describe the industrial preparation of Sodium by Down's Cell with the help of diagram. (06)
- b. Outline structure and uses of silicones. (01+03)
- c. Give three dissimilarities between Sulphur and Oxygen. (03)
- Q. 4**
- a. Give three reactions of benzene in which it behaves as saturated hydrocarbon and three reactions in which it behaves as un-saturated hydrocarbons. (03+03)
- b. What is nucleophilic substitution reaction? Compare its types in tabular form. (02+05)
- Q. 5**
- a. What are phosphatic fertilizers? How are they prepared? Mention the role of phosphorus in plant growth. (01+02+02)
- b. Define monomer and polymer. Classify polymers with respect to the type of monomer units in them with examples. (02+06)

— 2HS 1709 (Old) —