



BOARD OF INTERMEDIATE EDUCATION, KARACHI

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CHEMISTRY PAPER-II

(MODEL PAPER)

Annual Examination 2021

Total Time: 2 hours.

Total Marks: 85

Time :30 min **SECTION 'A' (M.C.Qs. (Multiple Choice Questions))** Marks: 43

Note: This section consists of 43 questions. Attempt all M.C.Qs. Each carries 1 marks.

Q 1:- Choose the correct answers for each from the given options:

The element which is present in group V A and period 3rd, its atomic number is:

- * 15 * 7 * 8 * 18

2) Hydrides of group V A are ----- in nature:

- * Acidic * Basic * Amphoteric * Neutral

3) Potassium when combines with oxygen form:

- * Normal oxide * Super oxide * Per oxide * All

4) Lithium has many similarities to its diagonal neighbour-----in “Be” family:

- * K * Mg * Ca * Na

5) $\text{Li}^{+1}_{(\text{aq})}/\text{Li}$ couple has exceptionally high negative electrode potential because of its large value of

- * Ionization potential * Hydration enthalpy

- * Electron Affinity * Electronegativity

6) Aluminium does not react with Nitric acid due to

- * Low reactivity * High Ionization Potential

- * Formation of oxide layer * It is a metal

7) “A” is the element of III A group which “B” belongs to V A group. When “A” reacts with “B” forms:

- * A_2B_3 * AB * AB_3 * A_3B_2

8) The mixture of “Al” and Fe_2O_3 is used in :

- * Pyrolysis * Thermite process * Electrolysis * Washing

9) This element is solid at room temperature and pressure:

- * Oxygen * Flourine * Bromine * Iodine

10) Electronic configuration of Cu^{+1} :

- * $4s^1, 3d^{10}$ * $4s^0, 3d^9$ * $4s^0, 3d^{10}$ * $4s^2, 3d^{10}$

11) The coordination number of Pt in $[\text{Pt}(\text{en})_2\text{Cl}_2]^{+2}$ is:

* 6 * 4 * 3 * 8

12) Only one of this compound given below obeys Markownikoff rule on reaction with HCl:

* $\text{CH}_3\text{-CH=CH}_2$ * $\text{CH}_2=\text{CH}_2$ * $\text{CH}\equiv\text{CH}$ * $\text{CH}_3\text{-CH=CH-CH}_3$

13) Unsaturated Hydrocarbon containing a double bond are called

*Parafins * Alkynes * Proteins * Olefines

14) The self linkage of carbon atoms is called:

* Homologue * Catenation * Isomerism * Polymerization

15) In ethyne (C_2H_2) each carbon is ----- is hybridized:

* dsp^3 * sp * sp^2 * sp^3

16) When acetylene is passed through red hot tube in presence of organonickel, it polymerizes to:

* Polyethene * Benzene * Protein * Polyacetylene

17) Aromatic compounds burns with sooty flame because:

* They have high percentage of carbon * They have high percentage of hydrogen atom
* They have ring structure * They resist reaction with air

18) This gas is used for ripening of fruit:

*Ethene *Ethane *Ethanol *Ethyne

19) Formaldehyde does not undergo aldol condensation due to:

* Presence of β -carbon * Absence of α -hydrogen
* Absence of ketonic group * Absence of -OH group

20) This is an example of oligosaccharides:

* Glucose * Fructose * Maltose * Starch

21) This will give Iodoform reaction on the treatment with Na_2CO_3 and I_2 :

* Aceticacid * Acetone * Acetic Anhydride * Methanol

22) The body store part of glucose for rainy days in-----in form of glucose:

* Liver * Lungs * Kidney * Heart

23) The colour of transition metal complexes is due to

* d-d transition of electrons * ionization * loss of s-electron * diamagnetic nature

24) Laughing gas is chemically:

* NO * N_2O * NO_2 * N_2O_4

25) Whichelement forms an ion with charge +3:

* Be * Al * O * Na

26) Nelson cell is used to prepare:

* Sodium Carbonate * Sodium Metal * Sulphuric Acid * Chlorine

27) which one of the following does not belong to alkaline earth metal

* Be * Ra * Ba * Pb

28) The hybridization in the carbon atom of carbonyl group is:

* sp^3 * sp^2 * sp * dsp^3

29) β, β' – dichloro diethyl sulphide is commonly known as:

* Biogas * Marsh Gas * Mustard gas * phosgene gas

30) The presence of double bond in a compound is the sign of:

* Saturation * unsaturation * Substitution * Combustion

31) The benzene molecules contains:

* Four double bonds * Two Double bonds
* One double bond * Delocalized π electrons

32) benzene cannot undergo:

* Substitution reactions * addition reactions
* oxidation reactions * elimination reactions

33) ethanol can be converted into ethanoic acid by:

* Hydration * Hydrogenation * Oxidation * Fermentation

34) It is not a nucleophile:

* OH^{-1} * CN^{-1} * SH^{-1} * BF_3

35) The hydrofluoric acid (HF) is used to make design on glass surface this process is called:

* Knocking * etching * hydrogenation * Sublimation

36) The polymer named bakelite is the product of formaldehyde and:

* Acetylene * PVC * Phenol * Vinyl Cyanide

37) E.D.T.A is this type of Ligand:

* bidentate * tetradentate * hexadentate * tridentate

38) This element has greatest tendency to lose electrons:

* Be * Li * Na * Cs

39) Alkali metals acts as:

* reducing agent * Bleaching agent * Oxidizing agent * Nitrating Agent

40) Galvanized iron is protected against rusting by a thin layer of:

* Cr * Sn * Pb * Zn

41) The metallic character of p-block elements depends electron population of outermost shell and

* Hydration energy * Electron affinity
* Ionization potential * Oxidation number

42) Tollen's reagent is:

* Ammonical cuperous oxide * Ammonical silver nitrate
* Ammonical silver oxide * Ammonical silver bromide

43) Acetone is formed by oxidation of:

* Primary Alcohol * Secondary Alcohol
* Tertiary Alcohol * Ether

Time: 1 hour 30 min

Section 'B' (Short Answer Questions)

(Marks: 24)

Note: Attempt any six part questions, Three from organic and Three from inorganic chemistry.
All questions carry equal marks.

Inorganic Chemistry

Q2: (i) Refer to the list of given compounds.

Compound	A	B	C	D
Specific Name	Dolomite	Whitrite	Blue vitriol	Potash Alum

* Write the formula of A & B. * Write the equation when C is heated up to 230 °C

* Write the chemical formula of D and also write two uses.

(ii) Write the IUPAC names of the following.

* $K_3[Fe(CN)_6]$ * $[Zn(OH)_4]^{2-}$ * $[Cr(NH_3)_3Cl_3]$ * $[Ni(en)_2Cl_2]$

(iii) Why Hydrogen gas cannot be placed in Group I A and VII A of the periodic table (at least four point for each)

(iv) Identify the groups of the periodic table that have following ground state electronic configuration in their outer most shell

* $3s^2, 3p^2$ * $3s^2, 3p^6 4s^1$ * $4s^2, 3d^1$ * $4s^2, 3d^{10} 4p^5$

(v) Describe the extraction of sodium from rock salt on industrial scale

(vi) What happens when (write equation)

* Nitric acid reacts with Phosphorous * Sodium reacts with oxygen
* Carbon mono oxide is treated with chlorine * Aluminum is treated with H_2SO_4 (conc.)

(Organic Chemistry)

(vii) Define the following.

* Glycosidic linkage * Plasticizer * Aromaticity * Homologous series

(viii) Define the Polymerization and Isomerism. Identify the following pair of compounds as Isomers and which pair contains polymer

* Glucose and Starch * CH_3-O-CH_3 and CH_3-CH_2-OH
* CH_3-CH_2-CHO and $CH_3-CO-CH_3$ * Vinyl Chloride and PVC

(ix) How can we prepare following compounds (any four)

* ethylene glycol from ethene * phenyl hydrazone from formaldehyde
* White solid from Acetylene * ethane from chloro methane * ethene from ethane

(x) Write the IUPAC names of the following (any four)

* $CH_3-CH(CH_3)-CH(CH_3)-CH_3$ * $CH_2=C(CH_3)-CH(CH_3)-C\equiv CH$

* CHI_3 * $CH_3-CH(CH_3)-CH(Cl)-CHO$ * $(CH_3)_3C.CO-CH_2CH_3$

(xi) Why benzene gives electrophilic substitution reaction. Discuss acylation of Benzene with mechanism.

(xii) What happens when, (write only equation)

- * acetylene reacts with water in presence of H_2SO_4 and HgSO_4 at 75°C .
- * Formaldehyde is polymerized in presence of H_2SO_4
- * Vapors of acetic acid are passed over MnO_2 at 500°C .
- * Ethanol in excess, is heated in presence of H_2SO_4 .

OR

* Write a short note on Amino Acid or Fertilizer.

SECTION 'C' (Detailed-Answer Questions)

(Marks: 18)

NOTE: Attempt three question from this section in all, selecting atleast one question from Inorganic chemistry and one from organic chemistry.

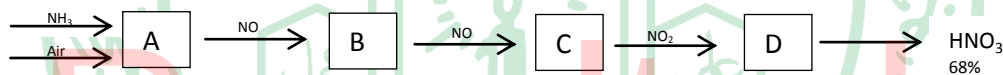
INORGANIC CHEMISTRY

Q3. Describe the extraction of 99% pure Aluminum from bauxite ore containing SiO_2 and Fe_2O_3 as Impurities.

(6)

Q4. The following chart represents stages in manufacture of HNO_3

(6)



* Describe the chemical process in stage A along with the conditions for maximum conversion.

* Describe the process in C and D. * How 98% concentrated HNO_3 is obtained.

OR

Define d-Block elements, why they are called transition elements? Discuss the following properties of d-Block elements.

* Variable Oxidation States * Magnetic Properties * Catalytic Properties

ORGANIC CHEMISTRY

Q5. Explain the reaction mechanism of $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reactions.

(6)

Q6. What is fermentation and how ethyl alcohol manufactured by fermentation of the following? (6)

* Starch

* Molasses

OR

Discuss the effect of substituent group (G) already present on benzene ring on the entry of the second substituent. Prepare the following compounds from benzene.

* m-nitrobenzoic acid

* o and p-nitrotoluene