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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) $Li^{+1}_{(aq)}$/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 $[Pt(en)_2Cl_2]^{+2}$ is:

*** 6 * 4 *3 * 8**

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

*** CH_3-CH=CH_2 * CH_2=CH_2 * CH≡CH * CH_3-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) $\beta, \beta' -$ 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 to230 °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 electronicconfiguration 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≡CH**

*** CHI_3 *CH_3-$CH(CH_3)$-CH(Cl)-CHO * $(CH_3)_3$C.CO-CH_2CH_3**

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

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

*** acetylenereacts 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 S_{N1} and S_{N2} 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**