

CLASS XII

GUESS PAPER

CHEMISTRY

1. All the questions are compulsory.
2. The questions paper consists of 30 questions divided into 4 sections a, B, C and D.
3. Section A comprises of 18 questions of 1 mark each. Section B comprises of 8 questions of 3 marks each. Section C comprises of 5 questions of 4 marks each. Section D comprises of 3 questions of 6 marks each.
4. Use of calculators is not permitted.

SECTION-A

Q.1 Following data are obtained for the reaction : (0.5+0.5=1)



If the rate constant of reaction is 5 sec^{-1} .

- (a) Show that it follows first order reaction.
 - (b) Calculate the half-life.
- (Given $\log 2 = 0.3010$ $\log 4 = 0.6021$)

Q.2 What is the effect of catalyst on : (1)

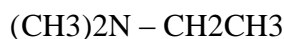
- (i) Gibbs energy (ΔG) and
- (ii) activation energy of a reaction ?

Q.3 Write one similarity between Physisorption and Chemisorption(1)

Q.4 Write the formula of an oxo-anion of Manganese (Mn) in which it shows the oxidation state equal to its group number.(1)

Q.5 Write the structure of 3-Bromo-2-methylprop-1-ene.(1)

Q.6 Write IUPAC name of the following compound (1)



OR

Draw the structure of given compound. (1)

(i) 4-Chloropentane-2-one

Q.7 Draw the structures of the following : (1)

(i) $\text{H}_4\text{P}_2\text{O}_7$

(ii) XeOF_4

Q.8 Write the Reimer teimann reactions.(1)

Q.9 Write the Cannizzaro reaction reactions.(1)

Q.10 Define the following term. (1)

(i) Abnormal molar mass

Q.11 Define the following terms (1)

(i) van't Hoff factor

Q.12 Account for the following : (1)

“Mn shows the highest oxidation state of +7 with oxygen but with fluorine it shows the highest oxidation state of +4 “

Q.13 What is the magnetic nature of $[\text{Cu}(\text{NH}_3)_4]^{+2}$? (1)

Q.14 What will happen when phenol reacts with KMnO_4 ? (1)

Q.15 which is better reducing agent between tollens reagent or fehling solution?

Q.16 What will be the rate constant unit of first order reaction?

Q.17 Account for the following : (13)

“Zirconium and Hafnium exhibit similar properties.”

Q.18 What is the principle of magnetic separation

SECTION-B

Q.19 Give reasons.(1+1+1=3)

(i) Fluoride ion has higher hydration enthalpy than chloride ion.

(ii) Nitrogen does not form pent halide.

(iii) Thermal stability decreases from H_2O to H_2Te .

Q.20 Give reasons : (1+1+1=3)

(i) CH_3NH_2 is more basic than $\text{C}_6\text{H}_5\text{NH}_2$.

(ii) Although $-\text{NH}_2$ is o/p directing group, yet aniline on nitration gives a significant amount of m-nitroaniline.

(iii) Acetylation of aniline reduces its activation effect

Q.21 Do the following conversions in not more than two steps : (1+1+1=3)

- (i) Benzoic acid to benzaldehyde
- (ii) 2-chloro butane to 2-butanal
- (iii) Propanone to Propene

Q.22 Following compounds are given to you : (1+1+1=3)

2-Bromopentane, 2-Bromo-2-methylbutane, 1-Bromopentane

- (i) Write the compound which is most reactive towards S_N2 reaction.
- (ii) Write the compound which is optically active.
- (iii) Write the isomer which is optically active.

Q.23 Calculate the mass of Ag deposited at cathode when a current of 2 amperes was passed through a solution of $AgNO_3$ for 15 minutes. (Given : Molar mass of Ag = 108 g mol^{-1} $1F = 96500 \text{ C mol}^{-1}$) (3)

OR

A 10% solution (by mass) of sucrose in water has freezing point of 269.15 K. Calculate the freezing point of 10% glucose in water, if freezing point of pure water is 273.15 K. Given : (Molar mass of sucrose = 342 g mol^{-1}) (Molar mass of glucose = 180 g mol^{-1}) (3)

Q.24 (a) Give simple chemical tests to distinguish between the following pairs of compounds : (1+1+1=3)

- (i) Ethanol and Phenol
- (ii) Propanol and 2-methylpropan-2-ol
- (iii) $CH_3-CO-CH_2-CH_3$ and $CH_3-CH_2-CH_2-CHO$

Q.25 Account for the following : (1+1+1=3)

- (i) Transition metals form large number of complex compounds.
- (ii) The lowest oxide of transition metal is basic whereas the highest oxide is amphoteric or acidic.
- (iii) E° value for the Mn^{3+}/Mn^{2+} couple is highly positive (+1.57 V) as compare to Cr^{3+}/Cr^{2+} .

Q.26 (a) Write the principle of method used for the refining of germanium. (1)

(b) Out of PbS and $PbCO_3$ (ores of lead), which one is concentrated by froth floatation process preferably ?(2)

(c) What is the significance of leaching in the extraction of aluminium ?(1)

SECTION-C

Q.27 Write one difference between each of the following : (2+1+1=4)

- (i) Multimolecular colloid and Macromolecular colloid
- (ii) Sol and Gel
- (iii) O/W emulsion and W/O emulsion

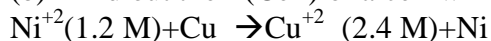
Q.28 Write the name of cells which are used in wall watches and inverters respectively? Also write their chemical reactions happening on their respective cathode and anode. Also draw the diagram. (1+2+1=4)

Q.29 (a) What happens when (1+1=2)

- (i) HCl is added to MnO₂ ?
- (ii) PCl₅ is heated with R-OH ?

Write the equations involved.

(b) Find out the E(Cell) of a cell which E⁰=2.14 V and the reaction is: (2)



Q.30 (i) What type of isomerism is shown by the complex [Co(en)₃]Cl₃ ? (1)

(ii) Write the hybridisation and magnetic character of [Co(C₂O₄)₃]³⁻ (2)

(At. no. of Co = 27)

(iii) Write IUPAC name of the following Complex [Cr(NH₃)₃]Cl₃ (1)

Q.31 (a) Write the difference between ionization isomers and coordinate isomers with examples? (2)

(b) What is the reactivity order of S_N1 reaction with examples?(2)

SECTION-D

Q.32 (a) Arrange the following compound groups in the increasing order of their property indicated : (2+2=4)

- (i) p-nitrophenol, ethanol, phenol (acidic character)
- (ii) Propanol, Propane, Propanal (boiling point)

(b) Write one similarity and one difference between the chemistry of lanthanoid and actinoid elements. (2)

OR

(i) How is the variability in oxidation states of transition metals different from that of the p-block elements ? (1)

(ii) Out of Cu⁺ and Cu²⁺, which ion is unstable in aqueous solution and why ? (1)

(iii) Orange colour of Cr₂O₇²⁻ ion changes to yellow when treated with an alkali. Why ? (2)

(iv) Chemistry of actinoids is complicated as compared to lanthanoids. Give two

reasons. (2)

Q.33 An Organic Compound(A) having molecular formula $C_9H_{10}O$ forms orange red ppt with 2,4-DNP reagent. Compound A gives (C) yellow ppt when heated in the presence of iodine and NaOH along with a colourless compound (D).(A) does not reduce Tollen's test or Fehling solution nor does it decolourise with Br_2 water. On drastic oxidation of (A), with chromic acid, carboxylic acid (E) with molecular formula $C_7H_6O_2$ is formed. Deduce the structures of organic compounds (A) to (E). Also write the chemical reactions. (6)

OR

(a) An organic compound with the molecular formula $C_9H_{10}O$ forms 2,4-DNP derivative, reduces Tollen's reagent and undergoes Cannizzaro reaction. On vigorous oxidation, it gives 1,2-benzenedicarboxylic acid. Identify the compound. (3)

(b) For a first order reaction, show that time required for 99% completion is twice the time required for the completion of 90% of reaction. (3)

Q.34 Explain the terms

- (a) Van-Arkel Method (b) Mond process (c) Hall-Heroult Process
(d) Chromatography (e) Leaching (f) Zone refining

OR

(a) Explain the terms (3)

(i) Raoult's Law (ii) Ideal and Non-Ideal solutions (iii) Henry Law

(b) A solution containing 0.513 gm of naphthalene (molar mass = 128) in 50 gm of Carbon tetrachloride gives a boiling point elevation of $0.402^\circ C$, while a solution of 0.625 gm of an unknown solute gives a boiling point elevation of $0.650^\circ C$. Find the molar mass of unknown solute? (3)