

CLASS XII GUESS PAPER CHEMISTRY

General Instructions:

- (1) All questions are compulsory
 - (2) THERE ARE 26 QUESTIONS
- =====

Q1. Out of C and CO , which is better reducing agent at 673 K ?

Q2. What is the IUPAC name of- $K[Co(CO)_4]$?

Q3. Why haloarene are less reactive than haloalkane towards nucleophilic substitution reaction ?

Q4. Explain Riemer tieman reaction?

Q5.(a) Sketch the Zwitter Ion form of amino acetic acid .

(b) The rate constant of a reaction is $2 \times 10^{-2} \text{ Lmol}^{-1} \text{ sec}^{-1}$.What is the order of the reaction ?

Q6. (a) The conversion of molecule X and Y follows second order Kinetics . If the concentration of X is increased to three times, how will it affect the rate of formation of Y

(b) Write the IUPAC name of the following organic compounds:

(a) $CH_3NHCH(CH_3)_2$ (b) $[Co(NH_3)_5(ONO)]^{+2}$

Q7 Write the mechanism of acid dehydration of Ethanol to yield ethene.

Q8.(1) Define Harery law with two application ?

(2) What is the value of Vant HOFF factor for dilute solution of K_2SO_4 in water?

Q9. The unit cell of an element of atomic mass 96 and density 10.3 g/cm^3 is a cube with edge length of 314 pm . Find the structure of crystal lattice.

Q10. Why is the reduction of a metal oxide easier if the metal formed is in liquid state at the temperature of reduction ?

Q11. Write short note on the following :

- (1) Hoffmann's bromamide reaction
- (2) Diazotisation

Q12. $[NiCl_4]^{2-}$ is paramagnetic while $[Ni(CO)_4]$ is diamagnetic though both are tetrahedral .Why?

Or

Out of the following two coordination entities which is chiral (Optically active)? (a) Cis- $[CrCl_2(ox)_2]^{3-}$ (b) trans- $[CrCl_2(ox)_2]^{3-}$

Q13. Give simple chemical tests to distinguish between following pairs of compound:

- (1) Phenol and Benzoic acid
- (2) 1-Propanol and 2-Methyl,2-Propanol

Q14. (A) What is Lanthanide contraction? What are the consequences of lanthanide contraction

(B). Classify each of the following as being either a p-type or a n-type semiconductor :

- (a) Ge doped with In
- (b) B doped with Si

Q15. (A) Element of group 16 generally show lower value of first Ionisation enthalpy compared to the corresponding periods of group 15. Why?

(B) Deduce the molecular shape of BrF_3 on the basis of VSEPR theory.

Q16. The following data were obtained at 303 K for the reaction:



Exp No.	[A] mol L ⁻¹	[B] mol L ⁻¹	Rate of formation of (mol L ⁻¹ min ⁻¹)
1.	0.1	0.1	6×10^{-3}
2.	0.2	0.2	7.2×10^{-2}
3.	0.3	0.4	2.88×10^{-1}
4.	0.4	0.1	2.4×10^{-2}

Calculate the rate of formation of D, when $[\text{A}] = 0.5 \text{ mol l}^{-1}$, $[\text{B}] = 0.2 \text{ mol l}^{-1}$.

Q17. Describe briefly the following :

- (a) Mutarotation
- (b) Anomer
- (c) denaturation of protein

Or

(A) The two strands in DNA are not identical but are complimentary. Explain

(B) What is the effect of denaturation on the structure of protein ?

Q18. (a) Distinguish between the terms homopolymer and copolymer and give an example of each.

(b) Write the name and structure of the monomer unit of the polymer "Dacron".

Q19. 2g benzoic acid dissolve in 25g of benzene show a depression in freezing point equal to 1.62K. Molar depression constant for benzene is $4.9 \text{ K kg mol}^{-1}$. What is the percentage associated of acid if it form double molecule in solution?

Q20. Ramesh went to Cinema theatre driving his car under foggy weather and met with an accident due to unbalanced driving with hindered beam of light.

- a) Define Tyndall effect.
- b) Which type of colloid is the fog?
- c) Mention the value associated with the above situation
- d) As a science student what you suggest how fog can be removed? (4 marks)

Q21 (A) What are biodegradable and non biodegradable detergents? Give an example of each.

(B) How do antiseptic differ from disinfectant ? Give an example of each.

Q22. (A) How will you bring about the following conversions in not more than three steps :-

- (1) Propene to propyne
- (2) Ethane to bromo ethane

(B) What happens when Ethyl chloride is treated with alcoholic KOH ?

Q23. (A) With the help of chemical equations, the method of preparation of potassium dichromate from chromite ore.

(B) Write balanced Ionic equations for what happens when acidified $K_2Cr_2O_7$ reacts with Ferrous sulphate solution.

Q24. (A) What are fuel cell ? With the help of a diagram describe the working of a fuel cell .

(B) Conductivity of .00241 M Acetic acid solution is $7.896 \times 10^{-5} \text{ S cm}^{-1}$, calculate its molar conductivity if molar conductivity at infinite dilution for acetic acid is $390.5 \text{ S cm}^2 \text{ mol}^{-1}$. What is its dissociation constant ?

Or

- (A) (1) Define conductivity and molar conductivity for the solution of an electrolyte?
 (2) Suggest the material other than hydrogen that can be used as a fuel in fuel cell?
 (3) Write the cell reaction which occur in lead storage battery
 (a) when the battery is in use
 (b) when battery is on charging

Q25. (A) An organic compound (A) with molecular formula C_8H_8O forms an orange red precipitate with 2,4-DNP reagent and gives yellow precipitate on heating with I_2 in the presence of NaOH . It neither reduces Tollen's reagent or Fehling solution, nor does it decolorizes bromine water or Baeyer's reagent . On drastic oxidation with chromic acid, it gives a carboxylic acid (B) having molecular formula $C_7H_6O_2$. Identify the compound (A) and (B) and explain the reaction involved.

(B) Arrange the following in increasing order of their property as indicated :

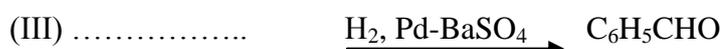
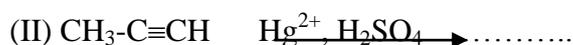
- (i) $CH_3-CH_2-CH(Br)-COOH$, $CH_3-CH(Br)-CH_2-COOH$ (CH₃)₂-CH-COOH (Acid strength)
- (ii) Ethanal, Propanal, Propanone (Reactivity towards nucleophilic addition reactions)

Or

(A) Give plausible explanation for the following :-

- (i) There are two $-NH_2$ group in semicarbazide, however only one is involved in the formation of semicarbazone.
- (ii) Although phenoxide Ion has more number of resonance structure than carboxylate Ion, Carboxylic acid is a stronger acid than phenol. Why ?

(B) Complete each synthesis by giving missing starting material, reagent or product:



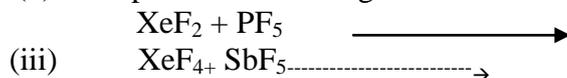
Q26.(A) Arrange the following in the order of property indicated against for each set :-

- (i) $NH_3, PH_3, AsH_3, SbH_3, BiH_3$ (Increasing basic strength)
- (ii) F_2, Cl_2, Br_2, I_2 (decreasing order of bond dissociation energy)

(B) Draw the structure of $XeOF_4$ and SF_6, BrF_3 ?

(c)

(1) Complete the following reactions:



Or

Q.(A) How is sulphuric acid prepared by Contact process ? Give chemical equations.

(B) Explain the following:-

- (i) Nitrogen exist as diatomic molecule but phosphorus as P_4 . Why?
- (ii) Sulphur shows paramagnetic behaviour in vapour state.
- (iii) Inter halogen compounds are more reactive than halogen.

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