

Chemistry Sample Paper Class 12 CBSE

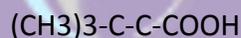
Time Allowed: 3 Hrs Maximum Marks: 70

General Instructions:

1. All questions are compulsory.
2. Question No. 1-8 are very short answer questions and carry 1 mark each.
3. Question No. 9-18 are short answer questions and carry 2 marks each.
4. Question No. 19-27 are also short answer questions and carry 3 marks each.
5. Question No. 28-30 are long answer questions and carry 5 marks each.
6. Use log tables if necessary, use of calculators is not allowed.

Q.1 Bond enthalpy of fluorine is lower than that of chlorine, why?

Q.2 Give the IUPAC name of the following compound:

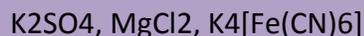


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Q.3 On increasing temperature, activation energy of a reaction decreases, why?

Q.4 Which of the following is most effective electrolyte in the coagulation of $\text{AgI}/\text{Ag}^+\text{sol}$?



Q.5 Write the reaction when glucose is heated with excess of HI.

Q.6 Which Xe compound has distorted octahedral shape?

Q.7 What is the denticity of co-ordination compound used for the treatment of lead poisoning?

Q.8 An alkoxide is a stronger base than hydroxide ion. Justify.

Q.9 (a) State the law which helps to determine the limiting molar conductivity of weak electrolyte.

(b) Calculate limiting molar conductivity of CaSO_4 (limiting molar conductivity of

calcium and sulphate ions are 119.0 and 160.0 S cm²mol⁻¹ respectively).

Q.10 Rate constant K for first order reaction has been found to be $2.54 \times 10^{-3} \text{ sec}^{-1}$. Calculate its three-fourth life.

OR

A first order gas reaction $A_2(g) + B_2(g) \rightarrow 2A(g) + 2B(g)$ at the temperature 400°C has the rate constant $K = 2.0 \times 10^{-4} \text{ sec}^{-1}$. What percentage of A_2B_2 is decomposed on heating for 900 seconds

Q.11 Do the following conversions:

- (i) Methyl bromide to acetone.
- (ii) Benzyl chloride to 2-phenyl acetic acid.

Q.12 How will you distinguish between the following pairs of compounds:

- (i) Chloroform and carbon tetra chloride.
- (ii) Benzyl alcohol and chlorobenzene.

Q.13 For a chemical reaction variation in rate with conc. is shown below:

Rate Conc. \rightarrow

What is the order of the reaction? What are the units of rate constant K for the reaction?

Q.14 Give the electronic configuration of d-orbitals of $K_3 [Fe(CN)_6]$ and $K_3 [FeF_6]$ and explain why these complexes give different colour with same solution. (At. No. Of Fe=26)

Q.15 Give reason for the following:

- (i) O-Toluidine is more basic than aniline.
- (ii) Tertiary amines do not undergo acetylation reaction.

Q.16 Write the following name reaction:

- (i) Gabriel phthalimide reaction.
- (ii) Hoffman bromamide reaction.

Q.17 Silver metal crystallises with a face centred cubic lattice. The length of unit cell is

found to be 4.077×10^{-8} cm. Calculate atomic radius and density of silver.

(atomic mass of Ag = 108u, $N_A = 6.02 \times 10^{23}$ mol⁻¹)

Q.18 Calculate packing efficiency in ccp structure.

Q.19 Manu and his father went to a shop to purchase a battery for their inverter.

Shopkeeper showed them two types of batteries, one with lead plates and the

other with cadmium plates. The battery with cadmium plates was more

expensive than the lead battery. Manu's father wanted to purchase lead battery

as it was cheaper. After reading the above passage, answer the following questions:

a) As a student of chemistry, why would you suggest to Manu's father to buy

the expensive cadmium plate battery. Give two reasons.

b) What are the values associated with the above decision?

Q.20 Give a reason for the following :

(i) Rough surface of catalyst is more effective than smooth surface.

(ii) Smoke passed through charged plates before allowing it to come out of chimneys in factories.

(iii) Ne gets easily absorbed over charcoal than He.

Q.21 (a) Give one example of each of the following:

(i) Acidic flux (ii) Basic flux

(b) What happens when:

(i) Cu_2O undergoes self reduction in a silica line converter.

(ii) Haematite oxidises carbon to carbon monoxide.

OR

(a) What role does cryolite play in Hall Haraoult process?

(b) How can alumina be separated from silica in a bauxite ore associated with silica? Give equations also.

Q.22 Write balanced chemical equations for the following reactions.

(a) Hypophosphorous acid is added to AgNO_3 solution.

(b) Chlorine gas is passed through hot and concentrated solution of sodium hydroxide.

(c) Xe F_2 undergoes hydrolysis.

Q.23 (i) Draw the structure of sulphuric acid.

(ii) A sparkless current is passed through oxygen to prepare ozone. why?

(iii) Bleaching action of sulphur is a temporary action .Comment.

Q.24 (i) Give one structural difference between amylose and amylopectin

(ii) Name the protein and its shape present in oxygen carrier in human body.

(iii) Name two fat storing tissues in human body.

Q.25 Define the following by giving one example of each:

(i) Antiseptics

(ii) Antioxidants

(iii) Narcotic analgesics

Q.26 (a) Write the names of the monomers of polymer used for making unbreakable crockery. .

(b) write the reaction of preparation of neoprene.

(c) Arrange the following polymers in decreasing order of intermolecular forces. PVC, Nylon 66, Natural rubber.

Q.27 Write the mechanism for preparation of ethanol from ethene.

Q.28 (a) What is the freezing point of 0.4 molal solution of acetic acid in benzene in which it dimerises to the extent of 85%. Freezing point of benzene is 278.4k and its molar heat of fusion is 10.042kj mol⁻¹.

(b) Explain the following:

- (i) Solution of chloroform and acetone is an example of maximum boiling azeotrope.
- (ii) A doctor advised a person suffering from high blood pressure to take less quantity of common salt.

OR

- (a) Calculate the boiling point of a solution containing 0.61g of benzoic acid in 5 g of CS₂. Assuming 84% dimerisation of acid. The boiling point and K_b of CS₂ are 46.2 °C and 2.3 K Kg mol⁻¹ respectively.
- (b) State Raoult's law for the solution containing non-volatile solute. Give its mathematical expression also.

Q.29 Account for the following :

- (i) Transition elements show highest oxidation state in their oxides than fluorides.
- (ii) Cu has positive electrode potential in the first transition series.
- (iii) Ionisation enthalpy of lanthanides is higher than actinides.
- (iv) Potassium dichromate is a good oxidising agent in acidic medium.
- (v) Actinides show more number of oxidation states than lanthanides.

OR

- (a) Compare non transition and transition elements on the basis of their
- (i) Variability of oxidation states (ii) stability of oxidation states.
- (b) Give chemical reactions for the following observations:
- (i) Potassium permanganate is a good oxidising agent in basic medium.
- (ii) Inter convertibility of chromate ion and dichromate ion in aqueous solution depends Upon pH of the solution.
- (iii) Potassium permanganate is thermally unstable at 513K.

Q.30. (a) Give names of the reagents to bring about the following transformations:

- i) Ethanoic acid to ethanol
- ii) Propane-1-ol to propanal

iii) Pent-3-en-2-ol to pent-3-en-2-one

iv) Sodium benzoate to benzene

(b) Arrange the following in the uncreasing order of:

i) Methanal, Propanal, Butanone, Ethanal, Propanone (nucleophilic addition reaction)

ii) Formaldehyde, Acetone, Acetaldehyde (reactivity towards HCN)

iii) Acetophenone, p-tolualdehyde, p-nitrobenzaldehyde, Benzaldehyde (nucleophilic addition reaction)

OR

(a) Bring out the following conversions:.

(i) 4-nitrotoluene to 2-bromobenzoic acid.

(ii) Ethylcyanide to 1- phenyl propanone.

(b) Give a reason for the following :

(i) Chloroacetic acid is more acidic than acetic acid.

(ii) Carboxylic acids have higher boiling point than alcohols.

(iii) 4-nitrobenzoic acid is more acidic than 4-methoxy benzoic acid.

Success Comes in Way...