

BHARATIYA VIDYA BHAVAN'S V.M.PUBLIC SCHOOL, VADODARA
SESSION 2017-18
Sample paper-7

Class: XII
Subject: Chemistry

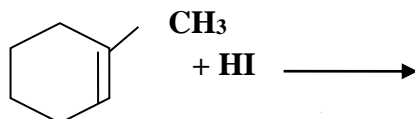
Max Marks: 70
Time Allotted: 3 hrs

General Instructions:

- i) All questions are compulsory.
- ii) Marks for each question are indicated against it.
- iii) Q. No. 1 to 5 are very short questions and carry one mark each.
- iv) Q.No. 6 to 10 are short answer questions of 2 marks each.
- v) Q.no. 11 to 22 are also short answer questions and carry 3 marks each.
- vi) Q. No.23 is value based question and carries 4 Marks .
- vii) Q. No. 24 to 26 are long answer questions and carry 5 marks each.
- viii) Use log tables if necessary. Use of calculators is not permitted

Questions 1 to 5 are of 1 mark each

1. Classify the following solids based on nature of intermolecular forces : Urea, Rb, AlN, CaF₂.
2. Give an example of a substance which can act as colloid and crystalloid.
3. Which is the major product in the following reaction :



4. Write the structure of N-phenylbenzamide.
5. What is isoelectric point?

Questions 6 to 10 are of 2 marks each

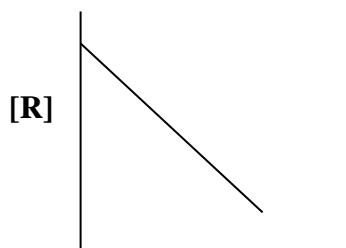
6. Why is an increase in temperature observed when chloroform and acetone are mixed? What kind of deviation will be shown by this solution? Explain with the help of a figure.

OR

The dose of a substance (C₁₉H₂₁NO₃) used to combat withdrawal symptoms in narcotic users is 1.5mg. Calculate the mass of 1.5X10⁻³ m aqueous solution required for the dose.

7. a) For a reaction A \longrightarrow B, the rate of reaction becomes 2.25 times when conc. increases by 1.5 times. What is the order of the reaction?.
- b) for a certain reaction The change in conc. 'R' with time is shown in the following plot

[R₀]



Time

What is the order of the reaction and what does the slope of the above line indicate?

8. a) Draw structure of $(\text{HPO}_3)_3$ and write its name.
b) Give a balanced equation for reaction of Cl_2 with cold and dilute alkali.
9. Give mechanism of preparation of ethoxy ethane from ethanol.
10. Give an account of Gabriel phthalimide reaction taking a suitable example. Why is this reaction not suitable for making primary aromatic amines?

Questions 11 to 22 are of 3 marks each

11. a) How many effective sodium ions are located at the edge centres of a unit cell in a sodium chloride crystal.
b) What makes glass different from solid quartz though constituent particles in both are SiO_4 tetrahedra.
c) What type of defect is responsible for violet color of KCl?

OR

- a) What is the interionic distance in NaCl crystal if edge length is 564pm.
- b) An element has bcc structure with edge length 288pm. Its density is 7.2g/cm^3 . How many atoms are there in 208g of the element.
12. 0.5g of KCl was dissolved in 100g of water and solution froze at -0.24°C . Calculate %age dissociation of the salt. [K=39u, Cl= 35.5u]
13. The activation energy for reaction, $2\text{HI}_{(g)} \longrightarrow \text{H}_{2(g)} + \text{I}_{2(g)}$, is 209.5 kJ/mol at 581K. Calculate the fraction of molecules of reactants having energy equal to or greater than activation energy.
14. a) Silica gel is used as a dehumidizer. Explain
b) Suggest a method to make a positively charged and negatively charged Silver iodide sol.
c) write the principle involved in the process of dialysis.
15. a) Explain with an example the role of depressant in froth floatation process.
b) Why metal sulphides are first converted to oxides before reduction?
c) The value of ΔG_f^0 for Cr_2O_3 is -540 kJ/mol and that of Al_2O_3 is -827 kJ/mol . Is reduction of Cr_2O_3 possible with Al?
16. Give reasons: a) NF_3 is exothermic compound but NCl_3 is endothermic compound.
b) H_3PO_3 is dibasic.
c) Bleaching effect of Cl_2 is permanent but that of SO_2 is temporary.
17. a) Draw structure of XeOF_4 .
b) What happens when H_3PO_3 is heated? Give equation and name this reaction.
c) Arrange the oxoacids of chlorine in the increasing order of their acidic strength.
18. a) Explain how the complexes $[\text{Ni}(\text{CN})_4]^{2-}$ & $[\text{Ni}(\text{CO})_4]$ have different structures but same magnetic behavior.
b) Draw all the isomers of $[\text{Co}(\text{ox})_2\text{Cl}_2]^+$ ion.

19. a) Give a chemical test to distinguish cyclohexyl chloride and chlorobenzene.
 b) A chemistry student considers the possible conversion of 4-chloro(chloromethyl)benzene to 4-hydroxy(chloromethyl)benzene and to 4-chlorophenylmethanol. State which is likely to be successful and justify your answer.
20. A compound 'A' ($C_4H_{10}O$) is optically active. On oxidation it gives a compound 'B'. 'B' on prolonged oxidation gives 'C' ($C_3H_6O_2$). 'C' along with 'D' is also formed from 'B' by reaction with iodine and alkali. Deduce A, B, C & D and write the reactions involved.
21. a) Describe primary and secondary structure of proteins. Give an example of α amino acid.
 b) Write the structure of product formed when glucose is oxidized with nitric acid.
22. a) what do you mean by chain growth and step growth polymers? Explain with an example each.
 b) State whether Buna-S is a co-polymer or homo-polymer. Write name and the structure of its monomers.

Question 23 is of 4 marks

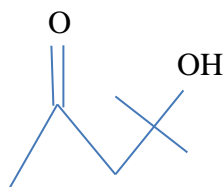
23. Kyra's younger brother likes taking medicines even when he is not ill. One such day, he drank cough syrup when he was healthy. After sometime he started feeling headache and his body started itching. Kyra's mother wanted to give him medication on his own without consulting the doctor. Kyra didn't allow his brother to take the medicines and took him to a doctor.
- a) Mention the values shown by Kyra.
 b) Why did his body start itching?
 c) Why should not medicines be taken without consulting the doctor?
 d) What are antihistamines?

Questions 24 to 26 are of 5 marks each

24. Carry out the following conversions in two steps:
 a) Benzointrile to acetophenone b) Ethanal to butane-1,3-diol c) Formaldehyde to benzyl alcohol d) Benzyl chloride to Phenyl acetic acid e) Nitro benzene to phenyl isocyanide.

OR

- a) Give IUPAC name of



- b) Give chemical reaction to prepare ketal from a carbonyl compound.
 c) Why is dialkyl cadmium superior to Grignard reagent for preparing ketone from acid chloride?

d) Describe Aldol condensation with an example. Write the structures of expected products of aldol condensation of 1-phenylpropanone

25. a) Lowest oxide of transition metal is basic, the highest oxide is acidic, Why?
 b) Transition metals act as very good catalysts, why?
 c) Sm^{2+} is a good reducing agent and Ce^{4+} is a good oxidizing agent, why?
 d) Give two reactions to show oxidizing nature of $\text{K}_2\text{Cr}_2\text{O}_7$ in acidic medium.

OR

a) Show with a figure splitting of d orbitals in an octahedral field. Discuss the formation of high spin and low spin complexes on the basis of Δ_0 and pairing energy by taking a suitable example.

b) Write two consequences of lanthanoid contraction.

26. a) Calculate the standard cell potential, ΔG^0 and equilibrium constant of the following reaction: $2\text{Cr}_{(s)} + 3\text{Cd}^{2+}_{(aq)} \longrightarrow 2\text{Cr}^{3+} + 3\text{Cd}_{(s)}$ (Given $E^0_{\text{Cr}^{3+}/\text{Cr}} = -0.74\text{V}$, $E^0_{\text{Cd}^{2+}/\text{Cd}} = -0.40\text{V}$)

b) State Kohlraush law. Why does conductivity of a solution n decreases with dilution.

OR

a) Why on dilution molar conductance of acetic acid increases drastically and that of sodium acetate slowly?

b) Why electrolysis of NaBr & NaI gives Br_2 and I_2 respectively but that of NaF gives O_2 ?

c) Rusting of iron is quicker in saline water than ordinary water, Why?

d) Explain the working of dry cell and mention the role of ZnCl_2 in a dry cell.

Ms. Rani Garg
