

**Sample Paper – 2013**  
**Class – XII**  
**Subject – Chemistry**

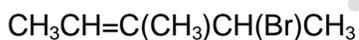
**Time-3 hrs**

**M.M- 70**

**GENERAL INSTRUCTIONS:**

- 1 All questions are compulsory.
2. Question number 1 to 8 are very short answer questions, carry 1 mark each
3. Question number 9 to 18 are short answer questions, carry 2 marks each
4. Questions number 19 to 27 are also short answer questions, carry 3 marks each.
5. Question number 28 to 30 are long answer questions carry 5 marks.

1. What is the difference between ionic solid and metallic solid ?
2. Why does conductivity decrease with dilution ?
3. What do you mean by sol.
4. Why nitrogen gas is inert at room temperature?
5. Write IUPAC name of the following compound:



6. What are ambident nucleophiles? Explain with an example.
7. Define isoelectric point ?
8. Discuss vulcanisation of rubber.
9. What type of deviation is observed when acetone is added to chloroform? Explain ?
10. Explain a method to prevent corrosion ?
11. Calculate the potential of hydrogen electrode in contact with a dilute HCl ( $10^{-8}$  M) solution .
12. Answer the following: i) Sulphur in vapour state exhibit paramagnetic behavior. Explain.  
ii) Write the isoelectronic neutral species of  $\text{ClO}^{-1}$  .
13. Are Ag and Cu transition metal are not ? Explain?
- 14 (i) Allyl chloride follow  $\text{SN}^1$  mechanism or  $\text{SN}^2$ . Explain.  
(II) Why anhydrous  $\text{AlCl}_3$  use as catalyst?
15. Convert- (i) Ethanol to but-1-yne

(ii) Methyl bromide  $\rightarrow$  Propan -1-ol

16. Explain

(i) Why cannot aromatic primary amines be prepared by Gabriel phthalimide synthesis?

(ii). Aniline does not undergo Friedel-Crafts reaction

17. Explain with one example

(i) Hofmann's bromamide reaction (ii) Gattermann reaction

18. What is a biodegradable polymer? Give an example of a biodegradable aliphatic polyester.

19. Silver crystallizes in F.c.c., if edge length is  $4.07 \times 10^{-8}$  cm and density is  $10.5 \text{ g/cm}^3$  calculate the Atomic mass of silver.

20. Vapour pressure of chloroform ( $\text{CHCl}_3$ ) and dichloromethane ( $\text{CH}_2\text{Cl}_2$ ) at 298 K are 200 mm Hg and 415 mm Hg respectively. (i) Calculate the vapour pressure of the solution prepared by mixing 25.5 g of  $\text{CHCl}_3$  and 40 g of  $\text{CH}_2\text{Cl}_2$  at 298 K and, (ii) mole fractions of each component in vapour phase.

OR

0.6 mL of acetic acid ( $\text{CH}_3\text{COOH}$ ), having density  $1.06 \text{ g mL}^{-1}$ , is dissolved in 1 litre of water. The depression in freezing point observed for this strength of acid was  $0.0205^\circ\text{C}$ . Calculate the van't Hoff factor and the dissociation constant of acid.

21. (i) Why does physisorption decrease with the increase of temperature?

(ii) Why are powdered substances more effective adsorbents than their crystalline forms?

(iii) Describe some features of catalysis by zeolites.

22. Explain:-

(i) Describe a method for refining Ti?

(ii) What do you mean by depressants.

(iii) What is the role of cryolite in the extraction of aluminium.

23. How would you account for the following:

(i) Of the  $d^4$  species,  $\text{Cr}^{2+}$  is strongly reducing while manganese(III) is strongly oxidising.

(ii) Cobalt(II) is stable in aqueous solution but in the presence of complexing reagents it is easily oxidised.

(iii) The  $d^1$  configuration is very unstable in ion

24. (i) Why  $[\text{Ti}(\text{CN})_4]^{2-}$  is paramagnetic or diamagnetic?

(ii) Why aqueous copper sulphate solution (blue in colour) gives a green precipitate with aqueous potassium fluoride.

(iii) Show the octahedral splitting of d subshell. And state how pairing energy is related with  $\Delta^\circ$ , in a metal ion ( $M^{+n}$ ) having  $d^4$  configuration.

25. (a) What is glycogen? How is it different from starch?

(b) What do you understand by the term glycosidic linkage?

(c) What do you mean by mutarotation.

26 Describe the following:

(i) Hell-Volhard Zelinsky reaction (ii) Cannizzaro reaction

(iii) Decarboxylation

27. Explain the following terms with suitable examples

(i) cationic detergents (ii) Antihistamines (iii) non-ionic detergents

28(a) The decomposition of  $\text{N}_2\text{O}_5$  in  $\text{CCl}_4$  at 318K has been studied. Initially the pressure of  $\text{N}_2\text{O}_5$  is 0.5bar and after 180 minutes, it becomes 0.65 bar. The reaction takes place according to the equation  $2 \text{N}_2\text{O}_5 (\text{g}) \rightarrow 4 \text{NO}_2 (\text{g}) + \text{O}_2 (\text{g})$

Calculate the average rate and rate constant and partial pressure of  $\text{N}_2\text{O}_5 (\text{g})$  during this reaction at 200 minutes?

(b) The rate constant for a first order reaction is  $60 \text{ s}^{-1}$ . How much time will it take to reduce the initial concentration of the reactant to its  $1/32^{\text{th}}$  value? (2)

29. Assign reason for the following:

1x5

(i) Why does  $\text{O}_3$  act as a powerful oxidising agent?

(ii) Which form of sulphur shows paramagnetic behaviour and why?

(iii) What happens when sulphur dioxide is passed through an aqueous solution of  $\text{Fe}(\text{III})$  salt?

(iv) Why does  $\text{ICl}$  is more reactive than  $\text{I}_2$ ?

(v) What inspired N. Bartlett for carrying out reaction between  $\text{Xe}$  and  $\text{PtF}_6$ ?

30.(a) An organic compound (A) with molecular formula  $C_8H_8O$  forms an orange-red precipitate with 2,4-DNP reagent and does not give yellow precipitate on heating with iodine in the presence of sodiumhydroxide. It reduces Tollens' or Fehlings' reagent, nor does it decolourise bromine water or Baeyer's reagent. On drastic oxidation with chromic acid, it gives a carboxylic acid (B) having molecularformula  $C_8H_6O_4$ . Identify the compounds (A) and (B) and explain the reactions involved.

(b) Give simple chemical tests to distinguish between the Phenol and benzyl alcohol? (1)

(c) Write the mechanism of dehydration of ethanol. (1)

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