

Sample Paper
Class – XII
Subject – Chemistry

Time: Three Hours Max. Marks: 70

General Instructions

1. All questions are compulsory.
2. Question nos. 1 to 8 are very short answer questions and carry 1 mark each.
3. Question nos. 9 to 18 are short answer questions and carry 2 marks each.
4. Question nos. 19 to 27 are also short answer questions and carry 3 marks each.
5. Question nos. 28 to 30 are long answer questions and carry 5 marks each.
6. Use log tables if necessary, use of calculators is not allowed.

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1. Why do we require artificial sweetening agent?
2. Is $[\text{CH}_2 - \text{CH}(\text{C}_6\text{H}_5)]_n$ a homopolymer or a copolymer?
3. Why CH_3CHO is more reactive than CH_3COCH_3 towards nucleophilic addition reaction?
4. Write IUPAC name of $\text{CH}_3\text{CH}(\text{Cl})\text{CH}(\text{Br})\text{CH}_3$
5. Name the oxometal anion of the first series of the transition metal in which the metal exhibit same oxidation state equal to the group number?
6. Why NH_3 has higher boiling point than PH_3 ?
7. In a process adsorbate and adsorbent are held by strong force like a chemical bond. Name the type of adsorption?
8. Why is glass considered a super cooled liquid?
9. What are cationic detergents. Explain with one example?
10. Write monomers of (a) Teflon (b) Bakelite
11. Define (a) Peptide Linkage (b) Primary Structure of protein
12. What happens when D- Glucose is treated with (a) HI (b) HNO_3
13. Explain with one example (a) Carbylamine Reaction (b) Kolbe reaction
14. Explain Lanthanoid Contraction and its consequences?
15. Explain
 - (a) Bi^{+3} act as strong oxidizing agent.
 - (b) Nitrogen do not form pentahalides
16. Explain:
 - (a) Why elements of 3d series have irregular E° value?
 - (b) Which is a stronger reducing agent Cr^{2+} or Fe^{3+} ?
17. The conversion of molecules X to Y follows second order kinetics. If concentration of X is increased to three times how will it affect the rate of formation of Y?

18. N₂ is bubbled through water at 293K. How many milli moles of N₂ would dissolve in 1 lt of water. Assume that N₂ exerts a partial pressure of .987 bar. Given that Henry's law constant for N₂ is 7648 bar.

OR

18 gm glucose is dissolved in 1Kg of water. At what temperature will water boil at 1.013 bar. K_b for water is .52 K Kg / mole.

19. Find A,B,C,D,E and F

Benzene is heated with nitric acid and sulphuric acid to give A. Treatment of A with hydrochloric acid and Sn gives B. B is treated with nitrous acid and hydrochloric acid in a ice cold solution to give C. C is treated with CuCN to give D. D is treated with LiAlH₄ to give E. C on treatment with F gives C₆H₅ N=N C₆H₅OH

20. Explain

(a) Why preparation of chloroalkane by the action of SOCl₂ on alcohol is preferred?

(b) Why is H₂SO₄ not used during the reaction of alcohol with KI.?

(c) Why p-isomer of dihalobenzene has M.P. 70 to 100 °C

Higher than ortho and meta isomer?

21.(a) Write linkage isomer of [Co (NH₃)₅ NO₂] Cl₂

(b) Explain the splitting of d-orbital in a octahedral complex?

22. (a) How is cast iron different from pig iron?

(b) Explain Zone refining?

23. Explain

(a) Colloid is not a substance but a state of substance.

(b) Why is adsorption always exothermic?

24. The following data were obtained during the first order decomposition of N₂O₅ at constant volume.



S.N. TIME (sec) TOTAL PRESSURE (atm.)

1. 0.5

2. 100.512

25. Calculate rate constant.

(a) Why do non ideal solution show negative deviation. Explain with an example?

(b) Why osmotic pressure is preferred to determine the molecular mass of macromolecule?

OR

(a) Why do abnormal values of molecular mass is obtained? Explain?

(b) Define Raoult's law for non volatile solute?

26. Aluminium has cubic close packed structure its metallic radius is 125pm.

(a) What is the length of the side of the unit cell ?

(b) How many unit cells are there in 1cm³ of Al.?

27. Explain:

(a) Why o-nitrophenol has lower boiling point than p - nitrophenol?

(b) Give mechanism of the reaction when ethanol is heated with sulphuric acid at 443 K temperature.

28. (a) Give a chemical test to distinguish between CH₃CHO and CH₃COCH₃

(b) Convert:

(i) Benzaldehyde to benzoic acid

(ii) Benzoic acid to benzamide

(iii) 4- methyl acetophenone to benzenedicarboxylic acid

OR

(a) Give a chemical test to distinguish CH₃COOH and C₆H₅COOH

(b) Convert:

(i) Acetaldehyde into 2-propanol

(ii) Toluene into benzaldehyde

(iii) Ethane into But-2enal

29. Explain:

- (a) why PCl_3 fumes in air?
- (b) Why oxygen does not show +6 state?
- (c) Why higher concentration of O_3 are explosive?
- (d) Why Cl_2 act as bleaching agent?
- (e) How is xenon oxide is prepared. Draw its structure?

OR

- (a) Why all the bonds in PCl_5 are not of equal length?
- (b) Why H_2S is less acidic than H_2Se ?
- (c) How is O_3 estimated quantitatively?
- (d) Why fluorine has lower electron gain enthalpy than chlorine?
- (e) What inspired N.Bartlett for carrying out reaction between Xe And PtF_6 ?

30. (a) Calculate E.M.F. of the cell:



$$E_{\text{cell}} = 1.05\text{V}$$

(b) Explain the variation of molar conductivity of strong and weak electrolyte with dilution?

OR

(a) Molar conductivity of NaCl , HCl and NaAc are 126.4, 425.9 and 91 $\text{S cm}^2 / \text{mole}$ calculate molar conductivity of HAc .

(b) Write anode and cathode reactions of a secondary cell, when charging and discharging is taking place by explaining lead storage battery