SAMPLE PAPER-(unsolved)

CHEMISTRY (Theory)

Class – XII

Time allowed: 3 hours MaximumMarks: 70

General Instructions:

- ❖ All the questions are compulsory.
- ❖ There are **26** questions in total.
- ❖ Questions **1** to **5** are very short answer type questions and carry **one** mark each.
- ❖ Questions **6** to **10** carry **two** marks each.
- ❖ Questions **11** to **22** carry **three** marks each.
- ❖ Questions **23** is value based question carrying **four** marks.
- ❖ Questions **24** to **26** carry **five** marks each.
- ❖ There is no overall choice. However, an internal choice has been provided in one question of
- ❖ two marks, one question of three marks and all three questions in five marks each. You have
- ❖ to attempt only one of the choices in such questions.

i. Use of calculators is **not** permitted. However, you may use log tables if necessary.

1. Give IUPAC name of CH3COCH2COCH3.
2. What is the hydrolysis product of (a) Sucrose (b) Lactose?
3. The decomposition reaction of ammonia gas on platinum surface has a rate constant k = 2.5 x 10-4 mol L/S. What is the order of the reaction?
4. An ore sample of galena is contaminated with zinc blende. Name the chemical which can be used to concentrate galena selectively by forth floatation method.
5. What type of linkage holds together the monomers of D.N.A?
6. What are 12 – 16 and 13 – 15 compounds? Give examples.
7. a)Define threshold energy of a reaction.

   b) Give the effect of catalyst on the rate of reaction.
8. Which is a stronger acid phenol or cresol? Explain.
9. a) How is Dacron obtained?

b) Give two examples of biodegradable polymer.

Or

(a) Give the difference between Buna-N and Buna-S.

(b) Classify the following as addition polymer and condensation polymer Terylene, Bakelite,PVC, Polythene.

10. Give reasons for the following

(a) Frenkel defect does not change the density of AgCl crystal.

(b) Pure zinc oxide is white solid but turns yellow on heating.

11. a) Low level nor-adrenaline is the cause of depression. What type of drugs is needed to cure this problem? Give two examples.

b) What are fillers and builders in soaps?

12. Fine the Gibbs energy change of the following cell reaction at 298K. Cr|Cr3+(0.1M) ||Cu2+(0.01M)|Cu Given E0cr3+|Cr = -0.75 V and E0Cu2+|Cu = +0.34 V

13. a) Write down the equations for hydrolysis of XeF_4 and XeF_6.

b) Which of these to reactions is a Redox reaction? Give reasons.

14. i. Which cleaning agent will you prefer in order to wash clothes with water containing dissolved calcium hydrogen carbonate, soaps or synthetic detergents? Why?

ii. Give an advantage of soaps over synthetic detergents.

Or

i. What are anti-fertility drugs? Give two examples.

ii. Why ranitidine better antacids than sodium bicarbonate or magnesium hydroxide?

15. Why o-hydroxybenzaldehyde is a liquid at room temperature while p-hydroxybenzaldehyde is a high melting solid?

16. An alkene compound ‘A’ (C_4H_8) which when treated with H_2O/H_2SO_4 gives $C_4H_{10}O$ which cannot be resolved into optical isomers. Identify ‘A’ with reactions.

17. Distinguish between with appropriate tests of:

a) Propanoyl chloride and propanoic acid.

b) Acetophenone and benzophenone.

c) Phenol and benzoic acid.

d) Benzoic acid and ethyl benzoate.

18. A metal ion M0+ having d4 valence electronic configuration combines with three didentate ligands to form a complex compound. Assuming $\Delta 0 > p$,

    (i) Draw the diagram showing d orbital splitting during this complex formation.

    (ii) Write the electronic configuration of the valence electrons of the metal Mn+ ion in terms of t2g and eg.

    (iii) What type of hybridization will Mn+ ion have?

    (iv) Name the type of isomerism exhibited by this complex.

19. Calculate the amount of KCl which must be added to 1 kg of water so that the freezing point is depressed by 2k.

20. Explain each of the following

    a. Nitrogen is much less reactive than phosphorus

    b. The stability of +5 oxidation state decrease down the group 15.

    c. The bond angles (O – N – O) are not of the same value in 2 *NO*- and 2 *NO*+

21. The Rate of a particular reaction triples when temperature change from 500 C to 1000 C. calculate the activation energy of the reaction.[Given log 3=0.4771; R = 8.314 JK-1 mol-1]

22. Amino acids may be acidic, alkaline or neutral. How does this happen? What are essential and non-essential amino acids? Name one of each type.

23. Mrs. Shobha along with their five neighbor live near a lake. They were living there since last five years. When they shifted there, the lake was very beautiful but now it contains a number of phytoplanktons. One day Ravi, son of Shobha after coming from school advised his Mother and her neighbor not to wash the clothes with detergent but use natural soaps for this purpose of you want to control the growth of phytoplankton. Mrs. Shobha and her neighbor follow this advice and got the beauty of the lake. Read the above passage and answer the following question

    a. What values are expressed by Ravi and His mother?

    b. Why phytoplankton grow excessively while they were using detergents?

24. A translucent white waxy solid (A) on heating in an inert atmosphere is converted to its allotropic form (B). Allotrope (A) on reaction with very dilute aqueous KOH liberates a highly poisonous gas (C) having rotten fish smell. With excess of chlorine forms (D) which hydrolyses to compound (E). Identify compounds (A) to (E) .

Or

Explain the following properties of transition elements:

a) Enthalpy of atomization.

b) Variable oxidation state.

c) Coloured complex formation.

25. a) Derive the relationship between relative lowering of vapour pressure and mole fraction of the volatile liquid.

b) i) Benzoic acid completely dimerises in benzene. What will be the vapour pressure of a solution containing61g of benzoic acid per 500g benzene when the vapour pressure of pure benzene at the temperature of experiment is 6606 torr?

ii) What would have been the vapour pressure in the absence of dimerization?

iii) Derive a relationship between mole fractions and vapour pressure ofa component of an ideal solution in the liquid phase and vapour phase.

Or

a) Which aqueous solution has higher concentration -1 molar or l molal solution of the same solute? Give reason.

b) 0.5g KCl was dissolved in 100g water and the solution originally at 200C, freeze at -0.240C. Calculate the percentage ionization of salt. Kf per 1000g of water = 1.86K.

26. The compounds A and B dehydrobrominates to give the same alkene C which can regenerate both these compounds by the addition of HBr in presence and absence of hydrogen peroxide respectively. On hydrolysis, A and B gives isomeric products D and E respectively. Reaction of C with benzene in presence of hydrogen ions yields 1,1-diphenylethane. Give the structure of the compounds A → E with reactions.

Or

An organic compound ‘A’ (C8H6) reacts with dilute H2SO4 and HgSO4 giving ‘B’ which reacts with NaOH and I2 forming compounds ‘C’ and ‘D’. ‘D’ upon reaction with soda lime gives s hydrocarbon ‘E’ which on reaction with acetyl chloride in presence of anhydrous aluminum chloride gives ‘B’. Identify A,B,C,D and E and write the reaction equation.