



REVISION SHEET

SUBJECT: CHEMISTRY

CLASS-XII

TERM 1

Very short answer type questions (1 mark)

- When liquids A and B are mixed, hydrogen bonding occurs. The solutions will show:
(a) positive deviation from Raoult's law (b) negative deviation from Raoult's law
(c) no deviation from Raoult's law (d) slightly increase in volume
- The azeotropic mixture of water and HCl boils at 108°C when the mixture is distilled. It is possible to obtain:
(a) pure HCl (b) pure water
(c) pure water as well as pure HCl (d) neither HCl nor water in their pure states.
- On freezing an aqueous solution of sugar, the solid which starts separating out is:
(a) sugar (b) ice
(c) solution with same composition (d) solution with different composition
- The value of osmotic pressure does not depend upon
(a) concentration of solution (b) temperature of solution
(c) number of particles of solute present (d) structure of solute particles
- Find charge required in Faraday in following processes:
 $1\text{ mole H}_2\text{O} \rightarrow \text{O}_2$
(a) 1.5F (b) 1F
(c) 2F (d) 6F
- What is equivalent weight of Cu in CuO? [molar mass of Cu = 63.5g/mole]
(a) 63.5g (b) 6.35g
(c) 31.75g (d) 15.75g
- The order and molecularity of the following reaction is:
 $\text{NH}_3(\text{g}) \rightarrow \text{N}_2(\text{g}) + 3\text{H}_2(\text{g})$
(a) Zero and one (b) One and zero
(c) One and one (d) Zero and zero
- The 'spin only' magnetic moment of Fe^{3+} ion_(aq) [Z = 26]
(a) 5.9BM (b) 9.5BM
(c) 4.9BM (d) 6.0BM
- Which among the following shows diamagnetic character.
(a) Mn^{2+} (b) Cu^{2+}
(c) Zn^{2+} (d) Co^{2+}
- Which among the following will react faster with $\text{KOH}_{(\text{aq})}$
(a) $\text{CH}_3\text{CH}_2\text{-Cl}$ (b) $\text{CH}_3\text{CH}_2\text{-F}$
(c) $\text{CH}_2=\text{CH-Cl}$ (d) $\text{C}_6\text{H}_5\text{CH}_2\text{-Cl}$
- Which compound will form on reaction of phenol with CHCl_3 in basic medium?
(a) Benzoquinone (b) Salicylic aldehyde
(c) Salicylic acid (d) Aspirin
- Which compound will form if isopropyl alcohol reacts with PCl_5 ?

- (a) 2-chloropropane (b) 1-chloropropane
(c) Chloroform (d) CCl_4
13. Among the following which is weakest base?
(a) 4-Bromoaniline (b) 4-methyl aniline
(c) 4-isopropyl aniline (d) 4-Nitroaniline
14. Which among the following will not give ppt. With benzene sulphonyl chloride?
(a) 1° amines (b) 2° amines
(c) 3° amines (d) Aniline
15. Which will give chloroform on reacting with chlorine in basic medium?
(a) Acetophenone (b) Benzophenone
(c) Propanal (d) Pentan-3-one
16. Propanoic acid reacts with Cl_2 in presence of red P_4 followed by hydrolysis then product is:
(a) Citric acid (b) Lactic acid
(c) Formic acid (d) Acetic acid
17. The degree of ionization of HF in 1.00M solution is (freezing point of solution is -1.97°C)
(a) 6% (b) 12%
(c) 5.9% (d) 9%
18. Out of the following 1.0M aqueous solutions, which one will exhibit the largest freezing point depression?
(a) $\text{C}_6\text{H}_{12}\text{O}_6$ (b) $\text{Al}_2(\text{SO}_4)_3$
(c) K_2SO_4 (d) KCl
- 19.. Mole fraction of 0.2M aqueous solution is:
(a) 1.77 (b) 1.87
(c) 0.0036 (d) 0.347
20. What amount of electric charge is required for the reduction of 1 mole of $\text{Cr}_2\text{O}_7^{2-}$ into Cr^{3+} .
(a) 6F (b) 3F
(c) 1 F (d) 4F.
21. Which of the following electrolytic solutions has the least molar conductivity?
(a) 0.02M (b) 0.2M
(c) 2M (d) 0.002M
22. An ion is reduced to the element when it absorbs 6×10^{20} electrons. The number of Faradays of the ion is:
(a) 0.01. (b) 0.10.
(c) 0.001 (d) 0.0001

Given below are two statements labelled as Assertion (A) and Reason (R)

- (a) If both A and R correct and R is the correct explanation of A.
(b) If both A and R are correct but R is not the correct explanation of A.
(c) If A is true but R is false.
(d) If A is false but R is true.
23. Assertion: Chloroethane on reacting with KCN forms Ethan cyanide in large amount.
Reason: In this reaction bond formation take place from side of 'C'.
24. Assertion: p-nitro phenol is more acidic than p-methoxy phenol.
Reason: Nitro group is electron withdrawing makes O-H bond weaker.
25. Assertion: phenol does not dissolve in water.
Reason: It has -OH bond so it will form H-bond with water molecule.
26. Assertion: Phenol on reaction with Br_2/CS_2 forms o & p derivatives.
Reason: -OH group is o & p directing for electrophilic aromatic substitution.

Short answer type questions (2Marks)

27. Identify the reaction order from the following rate constant, $k = 2.3 \times 10^{-5} \text{ L mol}^{-1} \text{ s}^{-1}$.

28. Why does the rate of reaction not remain constant throughout the reaction process?
29. The rate constant for a zero order reaction in A is $0.0030 \text{ mol}^{-1}\text{s}^{-1}$. How long will it take for the initial concentration of A to fall from 0.10 M to 0.075 M?
30. A reaction has half-life of 10 min.
- calculate the rate constant for the first order reaction.
 - what fraction of reactant will be left after an hour of the reaction?
31. Why rate of reaction increase by increasing temperature?
32. (a) Write the difference between order and molecularity of reaction.
(b). Define Threshold energy and activation energy. How they are related?
33. Draw a schematic graph showing how the rate of a first order reaction changes in concentration of reactants.
34. Identify the reaction order from the following rate constant, $k = 2.3 \times 10^{-5} \text{ L mol}^{-1}\text{s}^{-1}$
35. Name the cell which were used in Apollo space programme.
36. Why does the conductivity of a solution decreases with dilution?
37. Give the importance of fuel cells over ordinary batteries.
38. Give the factors which affect corrosion.
39. Differentiate E.M.F. and potential difference.
40. Give the relation between conductivity and molar conductivity of a solution.
41. Give differences between electrochemical cell and Electrolytic cell
42. How will you bring about the following conversions?
- benzene to 3-bromonitrobenzene
 - ethanol to but-1-yne
 - 1-bromopropane to 2-bromopropane
 - benzene to 4-bromo-1-nitrobenzene
 - aniline to chlorobenzene
43. Give a chemical test to distinguish between the following pairs of compounds:
- chlorobenzene and cyclohexylchloride.
 - vinyl chloride and ethyl chloride.
44. Describe the following reactions with example :
- Hydroboration oxidation of Propene.
 - Acid catalysed dehydration of alcohols at 413K.
 - Williamson synthesis
 - Reimer-Tiemann reaction.
 - Kolbe's reaction
45. Explain dehydration of alcohols at 443K
- Long answer type questions(3Marks)
46. Calculate the e.m.f. of the cell at 25°C
- $$\text{Zn} | \text{Zn}^{+2}(0.01\text{M}) || \text{Fe}^{+2}(0.005\text{M}) | \text{Fe}$$
- $$E(\text{Zn}^{+2} | \text{Zn}) 0.763\text{V} \text{ and } E(\text{Fe}^{+2} / \text{Fe}) 0.44\text{V}$$
47. With the help of an example explain what is meant by pseudo first order reaction.
48. For a general reaction $\text{A} \rightarrow \text{B}$, rate law is $R = k[\text{A}]^2[\text{B}]$ if concentration of both reactant is triple then what will be rate of reaction?

- 49..Explain limiting molar conductivity of KOH does not change on dilution.
50. Define Chelation and Coordination number.
- 51.State Henry's law. Mention two applications of Henry's law.
- 52.Write chemical equations for the following reactions :
- (a)Sandmeyer Reaction
 - (b)Gattermann Reaction
 - (c)Swarts Reaction
- 53.(a)What happens when benzene diazonium chloride is heated with water?
- (b)When phenol is treated with bromine water, white precipitate is obtained. Give the structure and the name of the compound formed.
- 54.(a) Consider a cell given below $\text{Cu}|\text{Cu}^{2+}||\text{Cl}^-|\text{Cl}_2, \text{Pt}$ Write the reactions that occur at anode and cathode.
- (b)Why on dilution the $m \Lambda$ of CH_3COOH increases drastically, while that of CH_3COONa increases gradually?
- Or
- 55.Draw structure of fuel cell and write the reaction for working.
56. Write the cell reactions of a lead storage battery when it is discharged and recharged. How does the density of the electrolyte change when the battery is discharged?
57. Explain $[\text{Ni}(\text{CN})_4]^{2-}$ is square planar and diamagnetic
- Case-based study type questions (4Marks)
- This section contains two case-study type question carrying 4marks(1+1+2).
58. To prepare electrochemical cell we have to keep two metal plates of different electrode potential in its salt solutions. Current flow from metal plate which shows higher electrode potential to of lower and direction of electron flowing is opposite of it. But at equilibrium state current stops flowing but its standard electrode potential remain constant.
- (a)Why direction of current change on connecting given cell with battery of higher voltage?
 - (b)Why cell stop working at equilibrium state?
 - (c) Why density of solution increase in lead-storage battery on discharging it.
59. 'd' block elements are located between 's' block and 'p' block elements in ten vertical and four horizontal lines. These are also known as transition elements.Properties like melting point magnetic moment, colour, enthalpy of atomization etc. These are also used as good catalyst.heterogenous as well as homogenous catalyst.These are also used in formation of double salts and coordinate compounds.
- (a)Why Zn,Cd and Hg are not considered as 'd' block elements?
 - (b) Write reason for being as homogenous catalyst.
 - (c) A 'd' block element in its compound shows magnetic moment 5.29B.M.if atomic number of element is 24 then find oxidation state of it in the compound.
60. A galvanic cell is constructed using a zinc electrode in 1.0 M ZnSO_4 solution and a copper electrode in 1.0 M CuSO_4 solution at 25°C . The standard electrode potentials are: $E^\circ(\text{Zn}^{2+}/\text{Zn}) = -0.76 \text{ V}$ and $E^\circ(\text{Cu}^{2+}/\text{Cu}) = +0.34 \text{ V}$. The cell represented as:



(a)

Write the cell reaction and identify the anode and cathode.

Calculate the standard EMF of the cell.

- (b)If the concentration of Cu^{2+} is increased to 2.0 M, how will the cell potential Change?
- (c)State one application of this type of galvanic cell in real life.

Long answer type questions (5Marks)

61. Why does the rate of reaction not remain constant throughout the reaction process?(20-25)

62. The rate constant for a zero order reaction in A is $0.0030 \text{ mol}^{-1}\text{s}^{-1}$.How long will it take for(20-24)

the initial concentration of A to fall from 0.10 M to 0.075 M?(20-23)

63. A reaction has half-life of 10 min.

- (i) calculate the rate constant for the first order reaction.
- (ii) what fraction of reactant will be left after an hour of the reaction?(20-22)

64. Why rate of reaction increase by increasing temperature? Also explain effect of catalyst and concentration on rate of reaction.

(a) Write difference between ideal and non-ideal solutions.

(b) 7.5g urea dissolve in 90g water at its boiling point, find vapour pressure of solution.

65. (a) Find electrolysis products of aqueous solution of copper sulphate solution.

(b) Find time required to deposit 0.216g silver on passing 5A current through $\text{AgNO}_3(\text{aq})$.

(c) Find change in molarity of 0.4M CuSO_4 solution taking copper electrode on passing 4A for 30 minutes.

66. Give reason for the following:

(a) Zn is soft element.

(b) Cu^+ is colour less.

(c) Compounds of Sc are colour less.

(d) La shows +3 oxidation states while Ce shows +4 oxidation state.

(e) Mn shows dip in melting point.

67 On the basis of Lanthanoid contraction, explain the following :

(a) Nature of bonding in La_2O_3 and Lu_2O_3 .

(b) Trends in the stability of oxo salts of lanthanoids from La to Lu.

(c) Stability of the complexes of lanthanoids.

(d) Radii of 4d and 5d block elements.

(e) Trends in acidic character of lanthanoid oxides.

68. Answer the following questions :

(a) Which element of the first transition series has highest second ionisation enthalpy? why?

(b) Which element of the first transition series has highest third ionisation enthalpy?

(c) Which element of the first transition series has lowest enthalpy of atomization. explain

69. A hydrocarbon 'A', (C_4H_8) on reaction with HCl gives a compound 'B',

($\text{C}_4\text{H}_9\text{Cl}$), which on reaction with 1 mol of NH_3 gives compound 'C', ($\text{C}_4\text{H}_{11}\text{N}$).

On reacting with NaNO_2 and HCl followed by treatment with water, compound

'C' yields an optically active alcohol, 'D'. Ozonolysis of 'A' gives 2 mols of acetaldehyde. Identify compounds 'A' to 'D'. Explain the reactions involved.

70. How can you remove the hard calcium carbonate layer of the egg without damaging its semipermeable membrane? Can this egg be inserted into a bottle with a narrow neck without distorting its shape? Explain the process involved.

71. Why is the mass determined by measuring a colligative property in case of some solutes abnormal ? Discuss it with the help of Van't Hoff factor.

72. . Draw diagram of lead-storage battery and fuel cell also write reactions for working.

73. Give reason for the following:

(a) Explain hydrous copper sulphate is blue while ZnSO_4 and CuSO_4 are colourless?

(b) Why is the third ionisation energy of Manganese ($Z = 25$) is unexpectedly high?

(c) Which element among 3d- transition elements, do not exhibit variable oxidation states ?

(d) Silver (Ag) has completely filled d-orbitals ($4d^{10}$) in its ground state. How can you say that it is a transition element.

(e) In 3d series (Sc to Zn), the enthalpy of atomisation of Zn is low. Why?

74. Give answer of following:

(a) Out of the following elements, identify the element which exhibit +3 oxidation state? Cr, Co, Sc.

(b) The +4 oxidation state of cerium ($Z = 58$) is highly stable. Why?

75 (c) It is difficult to obtain lanthanoids in pure form. Why?

(d) The first ionization enthalpies of 5d-series elements is higher than those of 3d and 4d series elements why?

(e) What are Misch –metals?

76.

(a) Write difference between ideal and non-ideal solutions.

(b) 7.5g urea dissolve in 90g water at its boiling point, find vapour pressure of solution.

77. (a) Find electrolysis products of aqueous solution of copper sulphate solution.

(b) Find time required to deposit 0.216g silver on passing 5A current through $\text{AgNO}_3(\text{aq})$.

(c) Find change in molarity of 0.4M CuSO_4 solution taking copper electrode on passing 4A for 30 minutes.

78. An organic compound 'A' having formula $\text{C}_6\text{H}_6\text{O}$ on reacting with chloroform in basic medium forms compound 'B' and 'C'. These two on reacting with zinc dust forms compound 'D'. Compound 'A' on oxidation forms compound 'E' which on reacting with acetic anhydride forms 'F' which is good pain killer.

79. Write the mechanism for dehydration of alcohol at 413K.

80. (a) Explain the limitation of Williamson's synthesis.

(b) Why phenol does not show protonation reaction.

