VNR11C

Virudhunagar District
Common Half Yearly Examination - 2023

Standard 11
CHEMISTRY
Part - I

Time: 3.00 Hours Marks: 70

I. Choose the correct answer for all the questions: **15×1=15**

1) What is the mass of precipitate formed when 50 ml of 8.5% solution of $AgNO_3$ is mixed with 100 ml of 1.865% potassium chloride solution?
a) 3.59 g b) 7 g c) 14 g d) 28 g

2) Which one of the following is the least electronegative element?
a) Bromine b) Chlorine c) Iodine d) Hydrogen

3) Ionic hydrides are formed by
a) halogens b) chalcogens c) inert gases d) group one elements

4) When an ideal gas undergoes unrestrained expansion no cooling occurs because the molecules
a) are above inversion temperature
b) exert no attractive forces on each other
c) do work equal to the loss in kinetic energy
d) collide without loss of energy

5) Which of the following is not a thermodynamic function
a) internal energy b) enthalpy
c) entropy d) frictional energy

6) Phenol dimerises in benzene having Van't Hoff factor 0.54. What is the degree of association?
a) 0.46 b) 92 c) 46 d) 0.927

7) According to valence bond theory a bond between two atoms is formed when,
a) fully filled atomical orbitals overlap b) half filled atomic orbitals overlap
c) non-bonding atomic orbitals overlap d) empty atomic orbitals overlap

8) Which of the following species does not act as a nucleophile?
a) ROH b) ROR c) PCl_3 d) BF_3

9) Which of the following can be used as the halide component for friedal crafts reaction?
a) Chloro benzene b) Bromo benzene
c) Chloro ethane d) Isoprophyl Chloride

10) Ozone depletion will cause
a) forest fires b) eutrophication
c) bio-magnification d) global warming

11) The total number of orbitals associated with the principlal quantum number n = 2?
a) 9 b) 8 c) 4 d) 7

12) Formula of plaster of paris of
a) $3CaSO_4.H_2O$ b) $CaSO_4.2H_2O$ c) $2CaSO_4.2H_2O$ d) $CaSO_4\ ½H_2O$

13) When Δn_g is positive in cheroical equilibrium reaction then
a) $K_p < K_C$ b) $K_p = 1/K_C$ c) $K_p = K_C(RT)^{-ve}$ d) $K_p > K_C$

14) Cold dilute alkaline $KMnO_4$ is known as
a) Schiff's Reagent b) Fenton's Reagent
c) Tollen's Reagent d) Baeyer's Reagent

15) Match the following:

1) Iodoform	-	(i) Fire extinguisher
2) Carbon tetrachloride	-	(ii) Insectiside
3) CFC	-	(iii) Antiseptic
4) DDT	-	(iv) Refrigerants

a) (1)-(iii), (2)-(i), (3)-(iv), (4)-(ii) b) (1)-(ii), (2)-(iv), (3)-(i), (4)-(ii)
c) (1)-(iii), (2)-(ii), (3)-(iv), (4)-(i) d) (1)-(i), (2)-(ii), (3)-(iii), (4)-(iv)

Part - II

II. Answer any six questions. Q.No. 24 is compulsory. **6×2=12**

16) Calculate the total no. of angular nodes and radial nodes present in 3d and 4f orbitals.
17) Compare the ionisation energy of beryllium and boron.
18) How is bleaching powder prepared?
19) State Diffusion Law.
20) Write the shape and molecular geometry for BF_3.
21) What is meant by homologus series?
22) Define entropy. Give its unit.
23) Define - Acid Rain.
24) *Complete the following:* (a) $CH_3CH = CH_2 + H_2 \xrightarrow{Pt} ?$ (b) $CH_3MgCl + H_2O \rightarrow ?$

Part - III

III. Answer any six questions. Q.No. 33 is compulsory. **6×3=18**

25) Distinguish Oxidation and Reducation.
26) Write the exchange reactions of Deuterium.
27) Define electronegativity. State the trends in the variation of electronegativity along the period and group.
28) Define Le-Chatlier principle.
29) Explain the formation of H_2 molecule using MO theory.
30) Explain geometrical isomerism of 2-butene.
31) What are nucleophils and electrophiles? Give one example for each.
32) Give the structure and uses of DDT.
33) 50 g of tap water contains 20 mg of dissovled solids. What is the TDS value in ppm?

Part - IV

Answer all the questions. **5×5=25**

34) a) i) Calculate the empirical formula and molecular formula of a compound containing 76.6% carbon, 6.38% of hydrogen and rest oxygen. Its vapour density is 47 (3)
ii) What is exchange energy?

(OR)

b) i) Why hydrogen peroxide is stored in plastic bottle containers not in glass container? (2)
ii) Give any three properties of beryllium that are different from other elements of the group. (3)

35) a) i) Calculate the orbital angular momenum for d and f orbital (3)
ii) What are f-block elements (2)

(OR)

b) i) Derive the relation between enthalpy ΔH and internal energy ΔU for an ideal gas. (3)
ii) Write the mathematical formula for compressibility factor Z (2)

36) a) i) Define reaction quotient (2)
ii) What is Van't Hoff factor 'i'? (1)
iii) NH_3 and HCl do not obey Henry's law. Why? (2)

(OR)

b) Draw the Molecular Orbital diagram for oxygen molecule. Calculate its bond order and magnetic character. (5)

37) a) What is polymersiation? Explain the two types of polymerisation reaction of a cetylene. (5)

(OR)

b) i) Explain Birch reduction (2)
ii) Write notes on the adverse effect caused by ozone depletion. (3)

38) a) i) Explain a suitable method for purifying and separating liquids present in a mixture having very close boiling points. (3)
ii) Give an example for each of the following type of organic compounds (2)
(a) Non benzenoid (b) Carbocyclic

(OR)

b) i) $C_{(S)} + O_{2(g)} \rightarrow CO_{2(g)}$. Calculate the standard entropy change for the above reaction, given the standard entropies of $CO_{2(g)}$, $C_{(S)}$, $O_{2(g)}$ are 213.6 JK^{-1}, 5.740 JK^{-1} and 205 JK^{-1} respectively. (3)
ii) Write short notes on hyper conjugation. (2)

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