Tsi11C

Tenkasi District

Common Half Yearly Examination - December 2025

19-12-25

Standard 11

CHEMISTRY

Time Allowed: 3.00 Hours

Maximum Marks: 70

PART - I

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

1) 7.5 g of a gas occupies a volume of 5.6 litres at 0°C and 1 atm pressure. The gas is
a) NO b) CO_2 c) N_2O d) CO

2) Which one of the following is correct electronic configuration of chromium
a) $[Ar]3d^4 4S^2$ b) $[Ar]3d^5 4S^1$ c) $[Kr]3d^4 4S^1$ d) $[Ar]3d^9 4S^1$

3) In the third period the first ionisation potential is of the order
a) Na > Aℓ > Mg > Si > P b) Na < Aℓ < Mg < Si < P
c) Mg > Na > Si > P > Aℓ d) Na < Aℓ < Mg < P < Si

4) The cause of permanent hardness of water is due to
a) $CaC\ell_2$ b) $MgCO_3$ c) $Mg(HCO_3)_2$ d) $Ca(HCO_3)_2$

5) *Assertion* : Generally alkali and alkaline earth metals form superoxides
Reason : There is a single bond between O and O in superoxides
a) both assertion and reason are true and reason is the correct explanation of assertion
b) both assertion and reason are true but reason is not the correct explanation of assertion
c) assertion is true but reason is false d) both assertion and reason are false

6) Use of hot air balloon in sports and mateorological observation is an application of
a) Boyle's law b) Newton's law c) Kelvin's law d) Brown's law

7) The values of ΔH and ΔS for a reaction are respectively 30 KJ mol^{-1} and 100 $JK^{-1}mol^{-1}$. Then the temperature above which the reaction will become spontaneous is
a) 100 K b) 20°C c) 300 K d) 30 K

8) In a chemical equilibrium the rate constant for the forward reaction is 2.5×10^2 and the equilibrium constant is 50. The rate constant for the reverse reaction is
a) 11.5 b) 5 c) 2×10^2 c) 2×10^{-3}

9) Which one of the followig binary liquid mixtures exhibits positive deviation from Raoults law?
a) Acetone + Chloroform b) water + nitric acid
c) HCℓ + water d) ethanol + water

10) Shape of HCHO is
a) linear b) pyramide c) trigonal planar d) tetrahedral

11) In the hydrocarbon $\overset{7}{C}H_3-\overset{6}{C}H_2-\overset{5}{C}H=\overset{4}{C}H-\overset{3}{C}H_2-\overset{2}{C}\equiv\overset{1}{C}H$ the state of hybridisation of carbon 1, 2, 3, 4, and 7 are in the following sequence.
a) sp, sp, sp^3, sp^2, sp^3 b) sp^2, sp, sp^3, sp^2, sp^3
c) sp, sp, sp^2, sp, sp^3 d) all the above

12) Which of the following species does not acts as a nucleophile?
a) ROH b) ROR c) $PC\ell_5$ d) BF_3

13) Identify the compound 'z' in the following reaction

$$C_2H_6O \xrightarrow[623K]{Al_2O_3} X \xrightarrow{O_2} Y \xrightarrow[H_2O]{Zn} Z$$

a) Formaldehyde b) Acetaldehyde c) Formic acid d) none of these

14) Correct boiling point order
a) $CH_3C\ell > CH_2C\ell_2 > CHC\ell_3 > CC\ell_4$ b) $CH_2C\ell_2 < CHC\ell_3 < CH_3C\ell < CC\ell_4$
c) $CC\ell_4 > CHC\ell_3 > CH_2C\ell_2 > CH_3C\ell$ d) None of the above

15) Haemoglobin of the blood forms carboxy haemoglobin with
a) carbon dioxide b) carbon tetra chloride c) carbon monoxide d) carbonic acid

PART - II

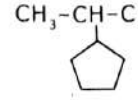
II. **Answer any 6 questions: (Question number 24 is compulsory)** **6×2=12**

16) What do you understand by the term mole?

17) Why halogens act as oxidising agents?

18) Mention the uses of Plaster of Paris.
19) Distinguish between diffusion and effusion.
20) Write Kp, Kc for the equilibrium $2CO_{(g)} \quad CO_{2(g)} + C_{(s)}$
21) What is green chemistry?
22) Give the IUPAC names of the following compounds:

i) 

ii) 

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23) Write short notes on Hyperconjucation.
24) Calculate the molality of a solution containing 7.5 g of glycine (NH_2-CH_2-COOH) dissolved in 500 g of water.

PART - III

III. Answer any 6 questions: (Question number 33 is compulsory) 6×3=18

25) How many radial nodes and angular nodes for 2s, 5d and 4f orbitals exhibit?
26) Magnesium loses electrons successively to form Mg^+, Mg^{2+} and Mg^{3+} ions. Which step will have the highest ionisation energy and why?
27) How will you convert para hydrogen into orthohydrogen?
28) List the characteristics of internal energy.
29) Explain VSEPR theory. Applying this theory to predict the shapes of IF_7 and SF_6
30) Describe the classification of organic compounds based on their structure.
31) Write the preparation and uses of DDT.
32) Discuss Huckel rule with example.
33) Complete the reaction: i) $CHCl_3 + HNO_3 \xrightarrow{\Delta} ?$

ii) $CH_3-CH = CH_2+HBr \xrightarrow{\text{Peroxide}} ?$ iii) $3CH \equiv CH \xrightarrow[873\ K]{\text{Red Hot Iron Tube}} ?$

PART - IV

IV. Answer all the questions: 5×5=25

34) a] i) A compound on analysis gave Na = 14.31%, S = 9.97%, H = 6.22% and O = 69.5%. Calculate the molecular formula of the compound, if all the hydrogen in the compound is present in combination with oxygen as water of crystallization. (molecular mass of the compound is 322) -3
ii) What is limiting reagent. -2

(OR)

b] i) Derive De-Broglie equation. -3
ii) State Pauli exclusion Principle. -2

35) a] i) Describe the biological importance of calcium and magnesium. -3
ii) Write the uses of Heavy water. -2

(OR)

b] i) Derive Ideal gas equation. -3
ii) Define periodic law. -2

36) a] i) Derive the relation between ΔH and ΔU for an ideal gas. -3
ii) Define entropy. -2

(OR)

b] i) Derive Kp, Kc for the formation of HI. -3
ii) Write the limitations of Henry's law. -2

37) a] Draw and explain the M.O. diagram for O_2 molecule -5

(OR)

b] i) Give the general characteristics of organic compounds. -2
ii) Explain SN^2 mechanism. -3

38) a] *Write short notes on the following:* -5
i) Sabatier - Sendersens reaction ii) Finkelstein reaction
iii) Sandmeyer reaction

(OR)

b] i) How is acid rain formed? Explain its effect. -3
ii) What are Freons? Write its uses. -2

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