

Tsi11C

Tenkasi District

Common Half Yearly Examination, December 2023



05-01-2024,
Time Allowed: 3.00 Hours

Standard 11
CHEMISTRY

Maximum Marks: 70

PART - I**15×1=15****Choose the correct answer:**

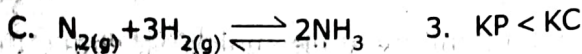
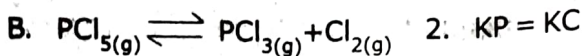
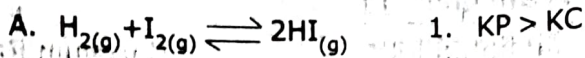
- The equivalent mass of a trivalent metal element is $9g\text{ equ}^{-1}$, the molar mass of its anhydrous oxide is _____.
 a) 102g b) 27g c) 270g d) 78g
- The energy of an electron in the 3rd orbit of hydrogen atom is $-E$. The energy of an electron in the first orbit will be
 a) $-3E$ b) $-E/3$ c) $-E/9$ d) $-9E$
- Assertion** : Helium has the highest value of ionisation energy among all the elements known.
Reason : Helium has the highest value of electron affinity among all the elements known.
 a) Both assertions and reason are true and reason is correct explanation for the assertion.
 b) Both assertion and reason are true but the reason is not the correct explanation for the assertion.
 c) Assertion is true and the reason is false.
 d) Both assertion and the reason are false.
- The hardness of water can be determined by volumetrically using the reagents _____.
 a) Sodium thio sulphate b) Potassium permanganate
 c) Hydrogen peroxide d) EDTA
- The name "Blue John" is given to which of the following compounds?
 a) CaH_2 b) CaF_2 c) $\text{Ca}_3(\text{PO}_4)_2$ d) CaO
- Equal moles of hydrogen and oxygen are placed in a container, with a pin hole through which both can escape what fraction of oxygen escapes in the time required for one half of the hydrogen to escape.
 a) $3/8$ b) $1/2$ c) $1/8$ d) $1/4$
- The enthalpies of formation of Al_2O_3 and Cr_2O_3 are -1596 KJ and -1134 KJ respectively, ΔH for the reaction $2\text{Al} + \text{Cr}_2\text{O}_3 \rightarrow 2\text{Cr} + \text{Al}_2\text{O}_3$ is _____.
 a) -1365 KJ b) 2730 KJ
 c) -2730 KJ d) -462 KJ
- Match the List - I with List - II select the correct answer using the code given below the list.

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List - I

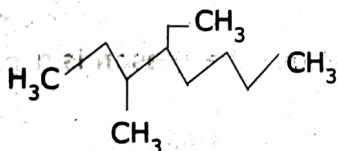
List - II



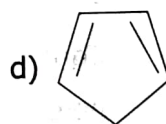
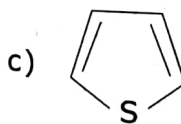
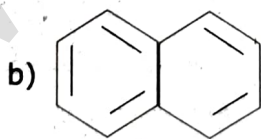
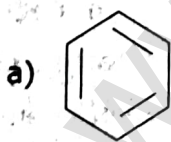
	A	B	C
a)	2	1	3
c)	1	3	2

	A	B	C
b)	2	3	1
d)	3	1	2

- 9) The relative lowering of vapour pressure of a sugar solution in water is 3.5×10^{-3} . The mole fraction water in that solution is _____
 a) 0.0035 b) 0.35 c) 0.0035/18 d) 0.9965
- 10) Non-zero dipole moment is shown by
 a) CO_2 b) P-dichlorobenzene
 c) Carbon tetra chloride d) Water
- 11) The IUPAC name of the compound is _____



- a) 2, 3 - Dimethyl heptane b) 3-methyl-4 ethyl octane
 c) 5-ethyl-6 methyl octane d) 4-ethyl-3-methyl octane
- 12) Decreasing order of nucleophilicity is _____
 a) $OH^- > NH_2^- > ^-OCH_3 > RNH_2$ b) $NH_2^- > OH^- > ^-OCH_3 > RNH_2$
 c) $NH_2^- > CH_3O^- > OH^- > RNH_2$ d) $CH_3O^- > NH_2^- > OH^- > RNH_2$
- 13) Which one of the following is non-aromatic?



- 14) Freon-12 is manufactured from tetrachloro methane by _____
 a) Wurtz reaction b) Swartz reaction
 c) Haloform reaction d) Gattermann reaction
- 15) Biochemical oxygen demand value less than 5ppm indicates a water sample to be
 a) highly polluted b) poor is dissolved oxygen
 c) rich in dissolved oxygen d) low COD

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PART - II**Answer any 6 questions in short. Q.No. 24 is compulsory: 6×2=12**

- 16) In a reaction $x+y+z_2 \rightarrow xyz_2$. Identify the limiting reagent, if any in the following mixtures.
- 200 atoms of x + 200 atoms of y + 50 molecule of z_2
 - 1 mol of x + 1 mol of y + 3 mol of z_2
- 17) What are isoelectronic ions? Give examples.
- 18) How is plaster of paris prepared?
- 19) State Charles law.
- 20) Write a balanced chemical reaction for a equilibrium reaction for which the equilibrium constant is given by expression $K_C = \frac{[NH_3]^4 [O_2]^5}{[NO]^4 [H_2O]^6}$.
- 21) Define hybridisation.
- 22) What are degradable and non-degradable pollutants?
- 23) Write Wurtz-Fitting Reactions.
- 24) Give the IUPAC names of the following compound:
- CH_3-O-CH_3
 - $CH_3-CH_2-CH-CHO$

OH

PART - III**Answer any SIX questions in short. Q.No. 33 is compulsory: 6×3=18**

- 25) State and explain Pauli exclusion principle.
- 26) Predict which of the following is a gas on a solid? (a) HCl (b) NaH.
Give your answer.
- 27) Explain the distinctive behaviour of beryllium.
- 28) Calculate the entropy change in the system and surroundings, and the total entropy change in the universe during a process in which 245J of heat. Flow out of the system at 77°C to the surrounding at 33°C.
- 29) Give the limitation of Henry's Law.
- 30) Lithium chloride is more covalent than sodium chloride. Why?
- 31) Write a note on Hyper conjugation.
- 32) How global warming occurs?
- 33) An organic compound (A) with molecular formula C_2H_5Cl reacts with KOH gives compound (B) and with alcoholic KOH gives compound (C). Identify A, B and C.

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PART - IV

Answer ALL the questions:

5×5=25

- 34) a) Calculate the empirical and molecular formula of a compound containing 76.6% carbon, 6.38% hydrogen and rest oxygen its vapour density is 47.

(OR)

- b) i) Describe the Aufbau principle.
ii) Define electronegativity.

- 35) a) i) Explain the exchange reaction of deuterium.
ii) Give the uses of gypsum.

(OR)

- b) Explain the characteristics of internal energy.

- 36) a) Derive the relation between K_p and K_c .

(OR)

- b) Define:
i) Isotonic solution
ii) Bond order
iii) Bond enthalpy

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- 37) a) Discuss the formation of N_2 molecule using MO Theory.

(OR)

- b) Describe the reactions involved in the detection of nitrogen in an organic compound by Lassaigne method.

- 38) a) Explain the preparation of the following compounds:

- (i) DDT (ii) Chloropicrin (iii) Freon-12

(OR)

- b) Write a note on depletion of ozone layer.
