

Chemistry Model Question Paper - 5

Question 1 :

An ionic compound is expected to have tetrahedral structure if $\frac{r_+}{r_-}$ lies in the range of

(A) 0.414 to 0.732

(B) 0.225 to 0.414

(C) 0.155 to 0.225

(D) 0.732 to 1

Answer: (B)

Question 2 :

An octahedral complex is formed when hybrid orbitals of the following type are involved

(A) sp^3

(B) $d\ sp^2$

(C) d^2sp^3

(D) sp^2d^2

Answer: (C)

Question 3 :

An organic compound on heating with CuO produces CO₂ but no water. The organic compound may be

- (A) Methane
- (B) Ethyl iodide
- (C) Carbon tetrachloride
- (D) Chloroform

Answer: (C)

Question 4 :

An organic compound X is oxidised by using acidified K₂Cr₂O₇. The product obtained reacts with Phenylhydrazine but does not answer the silver mirror test. The possible structure of X is

(A) (CH₃)₂CHOH

(B) CH₃CHO

(C) CH₃CH₂OH

(D) $\text{CH}_3 - \overset{\text{C}}{\parallel} \text{O} - \text{CH}_3$

Answer: (A)

Question 5 :

An oxygen containing organic compound upon oxidation forms a carboxylic acid as the only organic product with its molecular mass higher by 14 units. The organic compound is _____.

(A) a primary alcohol

(B) an aldehyde

(C) a ketone

(D) a secondary alcohol

Answer: (A)

Question 6 : Anisole can be prepared by the action of methyl iodide on sodium phenate. The reaction is called

(A) Wurtz's reaction

(B) Williamson's reaction

(C) Fittig's reaction

(D) Etard's reaction

Answer: (B)

Question 7 : Argon is used

(A) in high temperature welding

(B) in radiotherapy for treatment of cancer

(C) in filling airships

(D) to obtain low temperature

Answer: (A)

Question 8 : Arrange the following in the increasing order of their basic strengths :
CH₃NH₂, (CH₃)₂NH, (CH₃)₃N, NH₃

(A) (CH₃)₃N < NH₃ < CH₃NH₂ < (CH₃)₂ NH

(B) CH₃NH₂ < (CH₃)₂NH < (CH₃)₃N < NH₃

(C) NH₃ < (CH₃)₃N < (CH₃)₂NH < CH₃NH₂

(D) NH₃ < (CH₃)₃N < CH₃NH₂ < (CH₃)₂NH

Answer: (D)

Question 9 : Arrange the following in the increasing order of their bond order:

O₂, O₂⁺, O₂⁻ and O

(A) O₂⁺, O₂, O₂⁻, O₂²⁻

(B) O₂, O₂⁺, O₂⁻, O₂²⁻

(C) O₂²⁻, O₂⁻, O₂, O₂⁺

(D) O₂²⁻, O₂⁻, O₂⁺, O₂

Answer: (C)

Question 10 : Based on the first law of thermodynamics, which one of the following is correct?

(A) For an adiabatic process: $\Delta U = -w$

(B) For an isochoric process: $\Delta U = -q$

(C) For a cyclic process: $q = -w$

(D) For an isothermal process: $q = +w$

Answer: (C)

Question 11 : The yellow precipitate formed during the chromyl chloride test is chemically

- (A) lead chromate
- (B) chromic acid
- (C) sodium chromate
- (D) lead acetate

Answer: (A)

Question 12 : The typical range of molar enthalpies for the strongest intermolecular (Hydrogen) bonds is

- (A) 200 – 300 kJ
- (B) 300 – 500 kJ
- (C) 4 – 25 kJ
- (D) 4 – 25 J

Answer: (C)

Question 13 :

The time required for 100% completion of a zero order reaction is

(A) $a/2k$

(B) ak

(C) $2k/a$

(D) a/k

Answer: (D)

Question 14 :

The standard emf of a galvanic cell involving 2 moles of electrons in its redox reaction is 0.59 V. The equilibrium constant for the redox reaction of the cell is

(A) 10^5

(B) 10^{20}

(C) 10^{10}

(D) 10

Answer: (B)

Question 15 :

The spin only magnetic moment of Fe^{2+} ion (in BM) is approximately

(A) 7

(B) 4

(C) 6

(D) 5

Answer: (D)

