

Chemistry Study Materials for Class 11

(MCQs Questions with Answers of Chapter- 12)

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Question 11.

In the Dumas method, the nitrogen present in organic compound gets converted to

- (a) Sodium Cyanide (b) Gaseous Ammonia
(c) **Dinitrogen Gas** (d) Ammonium Sulphate.

Explanation:

Nitrogen present in the organic compound is converted into N_2 gas by heating the compound with CuO .

Question 12. 0.0833 mol of carbohydrate of empirical formula CH_2O contain 1 g of hydrogen. The molecular formula of the carbohydrate is

- (a) $C_5H_{10}O_5$ (b) $C_3H_4O_3$ (c) $C_{12}H_{22}O_{11}$ **(d) $C_6H_{12}O_6$**

Explanation:

As 0.0833 mole carbohydrate has hydrogen = 1 g

Therefore, 1 mole carbohydrate has hydrogen = $(10.0833) = 12$ g

Empirical Formula (CH_2O) has hydrogen = 2 g

Hence $n = (12)/(2) = 6$

Hence molecular formula of carbohydrate = $(CH_2O)_6 = C_6H_{12}O_6$

Question 14. Which one of the following conformations of cyclohexane is chiral?

- (a) Twist boat** (b) Rigid (c) Chair (d) Boat

Explanation: The twist boat conformation of cyclohexane is optically active as it does not have any plane of symmetry.

Question 15. If 0.228 g of silver salt of dibasic acid gave a residue of 0.162 g of silver on ignition then molecular weight of the acid is

- (a) 70 (b) 80 **(c) 90** (d) 100

Explanation:

Mass of silver salt taken = 0.228 gm

Mass of silver left = 0.162 gm

Basicity of acid = 2

Step 1- To calculate the equivalent mass of the silver salt (Eq. mass of silver salt)/(Eq. mass of silver)=(Mass of Acid taken)/(Mass of silver left)

$$(E/108) = (0.228/0.162)$$

$$E = (0.228/0.162) \times 108 = 152 \text{ (Eq. mass of silver salt)}$$

Step 2 – To calculate the eq. mass of acid = (Equivalent mass of acid)

= Equivalent mass of silver salt – Equivalent mass of Ag + Basicity

$$= 152 - 108 + 2$$

$$= 152 - 109$$

$$= 43 \text{ (Equivalent mass of acid)}$$

Step 3- To determine the molecular mass of acid.

$$\text{Molecular mass of the acid} = \text{Equivalent mass of acid} \times \text{basicity} = 43 \times 2 = 86.$$

Question 16. If there is no rotation of plane polarized light by a compound in a specific solvent, thought to be chiral, it may mean that

- (a) The compound may be a racemic mixture
(b) The compound is certainly a chiral
(c) The compound is certainly meso
(d) There is no compound in the solvent.

Explanation:

Meso compound does not rotate plane polarised light. Compound which contains tetrahedral atoms with four different groups but the whole molecule is a chiral, is known as meso compound. It possesses a plane of symmetry and is optically inactive. One of the asymmetric carbon atoms turns the plane of polarised light to the right and other to the left and to the same extent so that the rotation due to upper half is compensated by the lower half, i.e., internally compensated, and finally there is no rotation of plane polarised light.

Question 17. Which element is estimated by Carius method

- (a) Carbon (b) Hydrogen **(c) Halogen** (d) Nitrogen

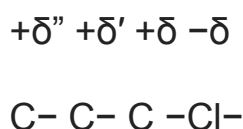
Explanation: Halogen element is estimated by Carius method

Question 18. Inductive effect involves

- (a) displacement of σ electrons** (b) delocalization of π electrons
(c) delocalization of σ -electrons (d) displacement of π -electrons

Explanation:

During inductive effect shifting of a electrons takes place due to which partially charges are developed on the atom.



Question 19. A crystalline solid possess which one of the following property?

- (a) Irregularity (b) Non- symmetric
(c) Perfect geometric pattern (d) non- stability

Explanation:

A crystalline solid is one which possesses perfect geometry, high stability, symmetric and regularly arranged.

Question 20.

Which of the following behaves both as a nucleophile and as an electrophile?

- (a) $\text{CH}_3\text{C} \equiv \text{N}$ (b) CH_3OH (c) $\text{CH}_2 = \text{CHCH}_3$ (d) CH_3NH_2

Explanation:

Due to the presence of a lone pair of electrons on N, $\text{CH}_3\text{C} \equiv \text{N}$: acts as a nucleophile. Further due to greater electronegativity of N than C, the C atom of $-\text{C} \equiv \text{N}$ carries a positive charge and hence behaves as an electrophile.
