Downloaded from www.studiestoday.com 3. Atoms and Molecules Q 1 144 grams of pure water is decomposed by passing electricity. 16 grams of hydrogen and 128 grams of oxygen are obtained. Which chemical law is illustrated by this statement? Mark (1) Q 2 What do you mean by Molar Mass? Mark (1) Q 3 What is atomic mass unit? Mark (1) Q 4 What are molecules? Mark (1) Q 5 What name is given to the number 6.023×10^{23} ? Mark (1) Q 6 Name the building blocks of matter. Mark (1) Q 7 How many metres are there in 1 nanometer (nm)? Mark (1) Q 8 Define atomicity. Mark (1) Q 9 Write the chemical formula of glucose. Mark (1) Q 10 Which subatomic particle was not present in Thomson's model of the atom? Mark (1)

Q 11 Write the symbol of element lead and iron.

Mark (1)

Q 12 Write down the formulae of aluminium sulphate and ethanol. Marks (2)

Q 13 What is the atomicity of –

- (a) Ozone (b) Nitrogen
- (c) Neon (d) Sulphur

Marks (2)

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Q 14 Write the symbols of the following elements :

a. Sodium

b. Calcium

c. Gold

d. Iron

Marks (2)

Marks (2)

Marks (2)

Marks (2)

Q 15 What weight (in grams) is represented by (a) 2 moles of CO_2 (b) 5 moles of NH_3 . Marks (2)

Q 16 Define law of conservation of mass.

Q 17 What is an atom ?

Q 18 How many moles are there in 1 litre of water?

Q 19 Write the chemical symbols of –

(a) Silver

(b) Potassium

(c) Tin

(d) Mercury

Q 20 Write two differences between an atom and its ion.

Marks (2)

Marks (2)

Q 21 What precentage of nitrogen is present in aluminium nitride? (Al = 27, N = 14). Marks (2)

Q 22 Calculate the number of moles for the following: (a) 12.046×10^{23} number of He atoms

(a) 12.046 x10 number of He ato (b) 56 = af He

(b) 56g of He

Marks (2) Q 23 Write the formula of the following compound and name the elements present in them.

(a) Ammonia (b) Sulphur dioxide

(c) Ethanol (d) Methane

Marks (2)

Q 24 What do we call those species which have-

(a) less electrons than the normal atoms.

(b) more electrons than the normal atoms.

Marks (2)

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Q 25 What is the mass of 5 moles of aluminium atoms? (Atomic mass of Al = 27 u) Marks (2)

Q 26 How many times is a proton heavier than an electron? Write the absolute mass of a proton. Marks (2)

Q 27 Which of the following are isotopes and which are isobars? Calcium, Protium, Argon, Deuterium

Marks (2)

Q 28 Calculate the mass of 0.8 mole of NaCl. (Atomic masses : Na = 23u; Cl = 35.5 u)

Marks (2)

Q 29 If one mole of oxygen atom weighs 16 grams, then what will be the mass (in grams) of 1 atom of oxygen?

Marks (2)

O 30 Write the chemical formula of: (i) Nitogen oxide (ii) Barium nitride

Marks (2)

Q 31 (a) Calculate the molecular masses of (i) H_3PO_4 (ii) H₂O₂ (Atomic masses: H=1, O=16, P=31)

Marks (2)

Q 32 Write the name of four elements which show variable valencies. Also write their valencies.

Marks (2)

Q 33 Calculate the mass of 6.022×10^{24} atoms of carbon.

Marks (2) Q 34 Calculate the mass of 1 molecule of Nitrogen. (Atomic mass of Nitrogen = 14)

Marks (2)

Q 35 Calculate the number of molecules present in a drop of water weighing 0.75 g. (H = 1, O = 16). Marks (3)

Q 36 Write the formula of :

(i) Ammonium sulphate

(ii) Magnesium nitrate

(iii) Aluminium bromide

Marks (3)

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Q 37 What do you understand by Formula Unit Mass? Calculate the formula unit masses of K_2CO_3 and ZnO. (Atomic masses of Zn = 65u, K=39u, C=12u)

Marks (3)

Q 38 An element X has a valency of 4

(a) What will be the formula of its chloride ?

(b) What will be the formula of its sulphide ?

(c) What will be the formula of its bromide?

Marks (3)

Q 39 Calculate the mass of 3.011 X 10²⁴ molecules of nitrogen gas. (Atomic mass of N=14 u) Marks (3)

Q 40 Distinguish between the molecule of an element and the molecule of a compound with the help of suitable example. Marks (3)

Q 41 How many grams of hydrogen gas contain the same number of molecules as 22 grams of carbon dioxide gas? Marks (3)

| Q 42 What the following abbreviations stands for. | | | | |
|---|--------------------|---------------------|--|--|
| (a) C | (b) 2H | (c) N ₂ | | |
| (d) 3N ₂ | (e) O ₃ | (f) O ²⁻ | | |

Marks (3)

| Q 43 Write the name of the fo | ollowing compounds: |
|-------------------------------|------------------------|
| (a) $Ca_3(PO_4)_2$ | (b) NaHCO ₃ |
| (c) $(NH_4)_2SO_4$ | (d) $MgCO_3$ |
| (e)FeSO ₄ | (f) AlCl ₃ |
| | Marks (3) |

Q 44 The mass of an atom of element (Y) is 5.30 x 10⁻²³g.
(i) Calculate its atomic mass.
(ii) Name this element.

Marks (3)

Q 45 Calculate the number of particles in each of the following:
(i) 92g of Na atoms
(ii) 7g of N₂ molecules
(iii) 0.1 mole of oxygen atoms

Marks (3)

Q 46 Which of the following weighs the most?(i) 32g of oxygen(ii) 10g atoms of hydrogen(iii) 0.5 of iron(iv) 6.022 x 10²² atoms of C

(Atomic mass: O=16, N=14, Fe=56, C=12)

Marks (3)

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Q 47 Calculate the number of atoms of each type in 2.65 g of Na₂CO₃.

Marks (5)

Q 48 If 2 g of water contains z molecules, what will be number of molecules in 4 g of carbon dioxide? Marks (5)

Q 49 (a) In 0.25 mol of P_4 , calculate

(i) The number of P₄ molecules

(ii) The number of P atoms

(iii) The number of moles of P atoms

(b)Calculate the number of moles of magnesium in its 200 gram. (Atomic mass of Mg = 24 u)

(c) Calculate the number of molecules present in 36 grams of water.

Marks (5)

Q 50 Calculate the number of chromium atom in 1.47 g of potassium dichromate ($K_2Cr_2O_7$) [Atomic mass: K=39, Cr=52, O=16]. Marks (5)

Q 51 Write any four significances of symbol. Give one example also.

Marks (5)

Q 52 Give the significance of the formula CO_2 .

Marks (5)

| Q 53 (i)Write the atomicity of the | following: |
|------------------------------------|-----------------|
| (a) Ozone | (b) Chlorine |
| (c) Helium | (d) Sulphur |
| (e) Oxygen | (f) Phosphorous |

(ii)Give one word answer

The Latin name of iron from which its symbol is derived. An atom or group of atom having positive charge.

Marks (5)

Most Important Questions

Q 1 State main points of Dalton atomic theory.

Q 2 State the law of constant proportion.

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Q 3 state the law of conservation of mass

Q 4 If 90g of pure water is obtained through 80g of oxygen and Xg of hydrogen.

a. Find the value of X.

b. Which chemical law is illustrated by this statement?

Q 5 Calculate the molecular mass of the following: a. H_2O b. HCl c. H_2S

Q 6 If 6g of hydrogen combine with 48g of oxygen, how many grams of water is obtained?

Q 7 If carbon and oxygen combine in a definite ratio of 3:8 to form carbon dioxide. What mass of oxygen gas is required in carbon dioxide with 10 g of carbon?

Q 8 Give symbol of the followinga. oxygen b. hydrogen c. carbon

Q 9 If atomic mass of carbon is 1u then what is the atomic mass of nitrogen (N=14, C=12)?

Q 10 Identify the anions, cations and charge present on them in following molecules: HCl , NaCl , H2O , Al2O3

Q 11 Write the chemical formula of the following:

- a. Oxygen
- b. Carbon dioxide
- c. Ammonia
- d. Calcium carbonate
- Q 12 Give the names of the following compounds:
 - a. H₂SO₄
 - b. He
 - c. CO

Q 13 Write the formula unit mass of the following:

- a. NH₃
- b. CO₂
- $c.\quad K_2Cr_2O_7$
- d. SO_2

e.
$$C_{12}H_{22}O_1$$

Q 14 Calculate the mass in grams of 0.8 mole of CO_2 .

Q 15 In which of the following cases the number of hydrogen atoms is more?

- a. One mole of CH_4
- b. Two mole of NH₃

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Q 16 Calculate the number of molecules in 20g of water.

Q 17 How many moles are present in 6g of sulphuric acid?

Q 18 What is the number of molecules in a drop of water weighing 0.2g?

Q 19 Calculate the number of S atoms in 2 mole of S_8

Q 20 How many moles are there in 70g of potassium dichromate,(K₂Cr₂O₇)?

Q 21 How many moles of calcium carbonate are present in its 5g ?

Q 22 What mass of hydrogen chloride, (HCl), will contain the same number of molecules as in

a. 6.022×10^{23} molecules of water

b. $2.0 \text{ g of methane, CH}_4$

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