Science Quiz July 2021

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1. The atomicities of ozone, sulphur, phosphorus and argon are respectively:
   (A) 8, 3, 4 and 1 (B) 1, 3, 4 and 8 (C) 4,1,8, and 3 (D) 3, 8, 4 and1

2. The radius of an oxygen atom is 0.073 nm. What does the symbols 'nm' represent?
   (A) nanometer (B) picometre (C) one metre (D) millions metre

3. Magnesium and oxygen combine in the ratio of 3:2 by mass to form magnesium oxide. What mass of oxygen gas would be required to react completely with 24 grams of magnesium?
   (A) 20 g   (B) 16 g   (C) 24 g   (D) 12 gram

4. When 5g of calcium is burnt in 2gram of oxygen, then 7 gram of calcium oxide is produced. What mass of the calcium oxide will be produced when 5 gram of calcium is burnt in 20 gram of oxygen?
   (A) 10g   (B) 7g   (C) 4g   (D) 18g

5. Potassium chlorate decomposes on heating to form potassium chloride and oxygen. When 24.5g of potassium chlorate decomposes completely, then 14.9g of potassium chloride is formed. Calculate the mass of oxygen formed.
   (A) 9.6g   (B) 10.5g   (C) 39.4 g   (D) none of these

6. The symbols of the elements cobalt, aluminium, helium and sodium respectively written by a student are as follows. Which symbol is the correct one?
   (A) CO   (B) AL   (C) He   (D) So

7. One nm is equal to -----
   (A) 10^{-9}mm   (B) 10^{-7}cm   (C) 10^{-9}cm   (D) 10^{-6}m

8. The atomic number of an element X is 13. What will be the number of electrons in its X^{+3}
   (A) 11   (B) 15   (C) 16   (D) 10

9. A particle X has 17 protons 18 neutrons and 18 electrons. This particle is most likely to be:
   (A) a cation   (B) an anion   (C) a molecule (D) a compound

10. An element A forms an oxide A_2O_5. What is the valency of element A?
    (A) 2   (B) 5   (C) 7   (D) 3

11. An element Y forms the following compounds with hydrogen, carbon and oxygen. H_2Y, CY_2, YO_2 YO_3 . State the three valences of element X which are illustrated by these compounds

    (A) 2,4 and 6   (B) 4,2 and 6 (C) 6, 2 and 4   (D) 2, 6 and 4

12. If the aluminium salt of an anion X is Al_2X_3. What is the valency of X? What will be the formula of the magnesium salt of X?
    (A) 3; Mg_2X_3 (B) 2; MgX_2 (C) 2; MgX (D) 1; MgX_2

13. Two elements X and Y have valences of 5 and 3, and 2 and 3 respectively. The elements X and Y are most likely to be respectively.
    (A) copper and sulphur   (B) sulphur and iron
    (C) phosphorus and nitrogen   (D) nitrogen and iron

14. Which ancient Indian philosopher suggested that all matter is composed of very small particle ?
    (A) Pakaudha Katyayama   (B) Maharishi Kanad
    (C) Democritius   (D) Leuippus

15. In water, the proportion of oxygen and hydrogen is - -----by mass
    (A) 1:2   (B) 8:1   (C) 1: 8   (D) 2:1

16. Which of the following elements has the same molecular mass as its atomic mass?
    (A) hydrogen   (B) sulphur   (C) neon   (D) bromine

17. The particle which is formed by loss or gain of electrons by an atom is called-------
    (A) a cation   (B) anion   (C) ion   (D) molecule

18. The cation of an element has----------
    (A) the same number of electron as its neutral atom
    (B) more electrons than a neutral atom
    (C) less protons than a neutral atom
    (D) less electrons than a neutral atom

19. 64 gram of oxygen gas contains ------- - moles of oxygen
    (A) 5   (B) 8   (C) 4   (D) 2

20. Which of the following pair of elements represents a mole ratio of 1:1?
    (A) 10 gram of calcium and 12 gram of magnesium
    (B) 12 gram of magnesium and 6 gram of carbon
    (C) 12 gram of carbon and 20 gram of calcium
    (D) 20 gram of sodium and 20 gram of calcium

21. Calculate the molar masses of the following substances with proper units. (i) ozone molecule O_3 (ii) ethanoic acid (CH_3COOH)
    (A) (i) 48g/mol (ii) 60/mol   (B) (i) 48 μ, (ii) 60μ
    (C) (i) 48 mol (ii) 60mol   (D) (i) 48 g (ii) 60 g

22. The mass of one molecule of a substance is 4.65 x 10^{-23} gram. What is its molecular mass? What could this substance?
    (A) 32μ, oxygen   (B) 28 μ, nitrogen   (C) 35.5 μ, chlorine   (D) none of these

23. What weight of oxygen gas will contain the same number of molecules as 56 gram of nitrogen gas?
    (A) 32 gram of oxygen   (B) 16 gram of oxygen   (C) 64 gram of oxygen   (D) 8 gram of oxygen

24. How many molecules are present in one-gram molecular mass of a substance?
    (A) 6.022×10^{23} molecules   (B) 6.022×10^{23} atoms
    (C) 3.022×10^{23} molecules   (D) 6.022×10^{27} molecules

25. What is the mass of 1 mole of cane sugar ($C_{12}H_{22}O_{11}$)
    (A) 64 g   (B) 46 g   (C) 18 g   (D) 180 g

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