

10th STANDARD

PART – I

$$1 \times 10 = 10$$

1. Which of the is a triatomic molecule?

- a) Glucose
- b) Helium
- c) Carbon dioxide
- d) Hydrogen
2. The volume occupied by 4.4 g of CO_2 at S.T.P
- a) 22.4 litre
- b) 2.24 litre
- c) 0.24 litre
- d) 0.1 litre
3. Mass of 1 mole of Nitrogen atom is
- a) 28 amu
- b) 14 amu
- c) 28 g
- d) 14 g
4. Which of the following represents 1 amu?
- a) Mass of a C-12 atom
- b) Mass of a Hydrogen atom
- c) $1/12$ th of the mass of a C-12 atom
- d) Mass of O-16 atom
5. Which of the following statement is incorrect?
- a) One gram of C-12 contains Avogadro's number of atoms.
- b) One mole of oxygen gas contains Avogadro's number of molecules
- c) One mole of hydrogen gas contains Avogadro's number of atoms
- d) One mole of electrons stands for 6.023×10^{23} electrons.
6. The volume occupied by 1 mole of a diatomic gas at S.T.P is
- a) 11.2 litre
- b) 5.6 litre
- c) 22.4 litre
- d) 44.8 litre
7. In the nucleus of ${}_{20}\text{Ca}^{40}$, there are
- a) 20 protons and 40 neutrons
- b) 20 protons and 20 neutrons
- c) 20 protons and 40 electrons
- d) 40 protons and 20 electrons
8. The gram molecular mass of oxygen molecule is
- a) 16 g
- b) 18 g
- c) 32 g
- d) 17 g
9. 1 mole of any substance contains _____ molecules.
- a) 6.023×10^{23}
- b) 6.023×10^{-23}
- c) 3.0115×10^{23}
- d) 12.046×10^{23}
10. Which of the following has the smallest mass?
- a) 6.023×10^{23} atoms of He
- b) 1 atom of He
- c) 2 g of He
- d) 1 mole atoms of He

PART - II

Answer the question (any 7)

7 x 2 = 14

11. Define: Relative atomic mass.
12. Write the different types of isotopes of oxygen and its percentage abundance.
13. What is Molar volume of a gas?
14. Find the percentage of nitrogen in ammonia.
15. Calculate the number of moles in 27 g of Al.
16. Calculate the gram molar mass of H_2O .
17. Define: Atomicity
18. Give any two examples for hetero diatomic molecules.

PART - III

5 X 5 = 25

Answer the following (any 5)

19. a) Calculate the % of each element in calcium carbonate. (Atomic mass: C-12, O-16, Ca -40)
b) Calculation of molecular mass Calculate the gram molecular mass of the following.
(i) H_2O
(ii) CO_2
20. Give the salient features of "Modern Atomic Theory".
21. Derive the relationship between Relative molecular mass and Vapour density.
22. How many grams are there in the following?
 - i. 2 moles of hydrogen molecule, H_2
 - ii. 3 moles of chlorine molecule, Cl_2
 - iii. 5 moles of sulphur molecule, S_8
 - iv. 4 moles of phosphorous molecule, P_4
23. a) Calculation of molecular mass Calculate the gram molecular mass of the following. $\text{Ca}_3(\text{PO}_4)_2$
b) Difference between Atoms and Molecules