

Model Question Paper
Atoms and Molecules (C) - Part II

10th Standard

Science

Reg.No. :

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I. Answer all the questions.

II. Use blue pen only.

Time : 01:00:00 Hrs

Total Marks : 38

4 x 1 = 4

Part-A

- 1) have equal number of neutrons.
(a) Isobars (b) Isotones (c) Isotopes (d) Mass Numbers
- 2) Classify the following based on atomicity.
(a) Chlorine (b) Neon (c) Phosphorous (d) Ozone
- 3) Identify and correct the mistake in each of the following:
(a) The molar volume of gas at STP is 22.4 cm^3 . (b) $2 \times \text{R.M.M.} = \text{V.D.}$ (c) An atom cannot exist independently.
(d) The ratio of atoms in a molecule may be integral or simple or may not be fixed. (e) H_2O is a homo atomic molecule.
- 4) Give a single term substitute for each of the following:
(a) 6.023×10^{23} molecules (b) 22.4 litres of gas at STP (c) 1/12th part of the mass of one atom of carbon (d) The half of relative molecular mass
(e) Molecular mass / atomic mass

Part-B

7 x 2 = 14

- 5) Modern atomic theory takes up the wave concept, principle of uncertainty and other latest discoveries to give a clear cut picture about an atom. State the findings of modern atomic theory.
- 6) How will you establish the relation between vapour density and molecular mass of a gas by applying Avogadro's law?
- 7) Calculate the number of moles in: i) 12.046×10^{23} atoms of Copper ii) 27.95g of Iron iii) 1.51×10^{23} molecules of CO_2
- 8) Complete the table given below:

ELEMENT	ATOMIC MASS	MOLECULAR MASS	ATOMICITY
Chlorine	35.5	71	
Ozone		48	3
Sulphur	32		8

- 9) 8. How many grams are there in: i) 5 moles of water ii) 2 moles of Ammonia iii) 2 moles of Glucose
- 10) Analyze the table and fill in the blanks

Gas	Atomic mass	Molecular mass	Atomicity
ozone	16	48	_____
nitrogen	14	_____	2

- 11) Analyse the table and fill in the blanks

	Substance	Mass	No. of moles
(a)	Al	81 g	_____
(b)	Fe	_____	0.5

Part-C

4 x 5 = 20

- 12) 100 g of calcium was extracted from 174 g of calcium oxide (Atomic mass of Ca=40, O=16) i) What mass of oxygen is there in 174g of calcium oxide? ii) How many moles of oxygen atoms are there in this? iii) How many moles of calcium atoms are there in 100 g of calcium? iv) What mass of calcium will be obtained from 1000 g of calcium oxide?
- 13) How many grams are there in the following? i) 1 mole of chlorine molecule, Cl_2 ii) 2 moles of sulphur molecules, S_8 iii) 4 moles of ozone molecules, O_3 iv) 2 moles of nitrogen molecules, N_2
- 14) Find how many moles of atoms are there in: i) 2 g of nitrogen. ii) 23 g of sodium iii) 40 g of calcium. iv) 1.4 g of lithium v) 32 g of sulphur.
- 15) (a) List out the differences between atoms and molecules. (b) Find the number of moles in copper containing 12.046×10^{23} molecules.
