



CHEMISTRY

BOOKS - BHARATI BHAWAN

CHEMISTRY (HINGLISH)

ATOMS, MOLECULES AND IONS

A Objective Questions I Match

1. Match the elements given in column A with their chemical symbols in column B



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2. Match the names of the elements given in column A with their Latin names in column B.



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li Fill In The Blanks

1. In a compound , the constituent elements are present in a fixed ratio by mass. This statement is called the law of



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2. Name the scientist who gave atomic theory of matter.



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3. Avogadro constant represents particles.



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4. An is an atom or a group of atoms which carries a fixed charge .



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5. The formula of washing soda is , while that of sodium sulphate is



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6. The phosphate ion is represented by



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7. 





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iii Write Yes Or No

1. Is it possible to see atoms these days?

Explain your answer.



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2. Out of atoms and molecules, which can exist independently?



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3. Out of atoms and molecules, which can exist independently?



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4. Is Hg the chemical symbol of mercury ?



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5. Is it possible to create matter ?



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6. What is the valency of calcium in $CaCO_3$?



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iv Mark The Statements True T Or False F

1. The correct formula of aluminium sulphate is $Al_2(SO_4)_3$.



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2. The formula of copper (I) chloride is written as Cu_2Cl_2 .



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3. Amongst the following statements, select the set having statements which was proposed by Dalton.

(1) All the atoms of a given element have identical properties including identical mass.

Atoms of different elements differ in mass.

(2) When gases combine or reproduced in a chemical reaction they do so in a simple ratio by volume provided all gases are at the same T & P

(3) Chemical reaction involve reorganization of atoms. These are neither created nor

destroyed in a chemical reaction.

(4) Matter consists of indivisible atoms



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4. The chemical symbol of iron is *Ir*.



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5. The molecular formula of buckminsterfullerene is C_{70} .



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6. One mole of a substance represents one gram-formula mass of the substance .



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7. Assertion : 1 amu is equal to 931.48MeV .

Reason: 1 amu is equal to $\frac{1}{12}$ th the mass of C^{12} atom.



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V Multiple Choice Questions Pick The Correct Option S

1. Which of the following contains maximum number of molecules?

A. 1g SO_2

B. 1g CO_2

C. 1g CH_4

D. 1g N_2

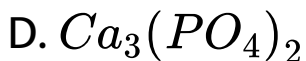
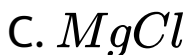
Answer: C





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2. Which of the following chemical formulae is (are) correct ?



Answer: D



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3. The chemical symbol for helium is



Answer: B



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4. Mass of one molecule of ammonia is

A. $\frac{1}{6.022 \times 10^{23}}$

B. $(34)/(6.022 \times 10^{23})$

C. $17 \frac{)}{6.022 \times 10^{23}}$

D. none of these

Answer: C



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5. The cation present in NH_4OH is



Answer: B



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6. The mass ratio of the combining elements in carbon dioxide (CO_2) is

A. 2: 8

B. 3: 8

C. 6: 16

D. 1: 2

Answer: B::C



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7. The empirical formula of a compound is HO .

It molar mass is 34. Which one of the following

is the molecular formula of the compound ?

A. H_2O

B. HO_2

C. H_2O_2

D. none of these

Answer: C



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8. Which of the following statement is (are) incorrect about an atom?

- A. An atom can exist independently .
- B. Atoms of elements combine to form molecules.
- C. Matter is made up of molecules, not atoms .
- D. An atom is either positively or negatively charged.

Answer: A::C::D



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B Very Short Answer Questions

1. Does an atom of an element show all the properties of the element ?



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2. Which of the following is the correctly symbol for silicon ?

Sl, Se, Si, S



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3. What is the smallest particle of a compound called ?



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4. Which of the following is the correct formula for sodium phosphate ?

Na_3PO_4 , $Na(PO_4)_3$, $NaHPO_4$, $Na_2(PO_4)_3$



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5. What is the ratio by number of atoms in a molecule of ammonia ?



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6. The chemical formula of sulphur dioxide is SO_2 . What is the atomicity of sulphur dioxide ?



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7. Which of the following is the correct symbol for cobalt, CO or Co ?



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8. What is the shorthand representation of an element called ?



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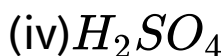
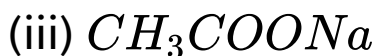
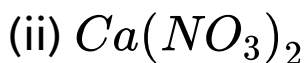
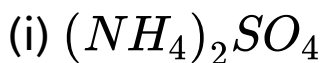
9. Name the instrument which can be used to view the atoms of an element .



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C Short Answer Questions

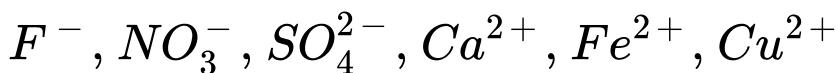
1. Indicate the cations present in the following compounds :





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2. From among the following chemical species , give the molecular formulae of all compounds that can be formed by the combination of these species .



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3. Define valency .

Calculate the valency of calcium in calcium

phosphate, $Ca_3(PO_4)_2$



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4. Point out the limitations of the law of constant composition if any.



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5. Differentiate between an atom and a molecule.



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6. What is the basic difference between empirical and molecular formulae ?



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7. Calculate the number of moles in 23g of sodium.



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8. The valency of carbon is 4 and that of hydrogen is 1. Write the formulae of the simplest compound produced by the combination of carbon and hydrogen .



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9. Calculate the mass ratio of elements present in the following compounds.

(i) NH_3 (ii) $CaCO_3$



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10. What is an ion ? Give one example .



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11. What do you mean by variable valency ?

Give two example of metals which show variable valency .



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12. How many atoms of oxygen are present in 1 mole of oxygen gas ?



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D Long Answer Questions

1. State the explain the law of conservation of mass. Describe an activity to chek the validity of the law .



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2. Explain

Atomic mass



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3. MOLECULAR MASS



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4. Explain

Avogadro constant



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5. Explain

Atomicity



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6. Write the chemical formulae of : Calcium nitrate



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7. Write the chemical formulae of : Aluminium chloride



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8. Write the chemical formulae of : Bismuth (III) phosphate



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9. Write the chemical formulae of : Copper (I) chloride



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10. Write the chemical formulae of : Sodium phosphate



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11. Write the chemical formulae of : Gold (III) chloride



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12. Crossword Puzzle

Solve the crossword puzzle according to the guidelines given in the following table.



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E Numericals

1. Two beakers A and B of equal mass contain 5 moles of methane (CH_4) and 5 moles of ammonia (NH_3) respectively. Which beaker will be heavier?



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2. What fraction of mass do neutrons contribute to carbon dioxide (CO_2)?



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3. Ram went to a grocer and asked for 2 moles of washing soda ($Na_2CO_3 \cdot 10H_2O$).

Calculate the amount of washing soda which the grocer should weigh for him .



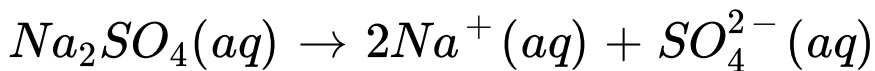
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4. Calculate the difference in masses of 10^3 moles each of Na atoms and Na^+ ions (mass of an electron = $9.1 \times 10^{-31} kg$).



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5. In aqueous solution, sodium sulphate (Na_2SO_4) dissociates into ions as follows .



Calculate the number of ions produced when 23.75 g of sodium sulphate is dissolved in water .



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6. Zinc blende (ZnS) is an important ore of zinc . What is the amount of sulphur present in

24.35 g of pure zinc blende (Zn=65.4 , S=32)?

How many moles of Zn atoms are present in

2.45×10^{24} atoms of zinc ?



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