TOPIC-1
Laws of Chemical Combination, Atom and Molecules, Valency, Chemical Formula of Common Compounds

R **Q. 1.** State the Law of Conservation of mass. **[Board Term-II 2016, Set-06P08E8] (DDE 2017) (1)**

Ans. .....

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R **Q. 2.** State the law of constant proportion. **(DDE 2017)[Board Term-II 2012, Set-SC-1072, 76, 80] (1)**

Ans. .....

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R **Q. 3.** Explain what do you understand by valence electrons ? **[Board Term-II 2015, Set-FCI0L5A] (1)**

Ans. .....

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R **Q. 4.** Write the chemical formula of :

(i) Sodium carbonate

(ii) Ammonium chloride **(NCERT) [Board Term-II 2011, Set-B] (2)**

Ans. .....

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R+U **Q. 5.** Show the formation of chemical formulae of following compounds using their ions :

(i) Ammonium sulphate

(ii) Magnesium nitrate

(iii) Aluminium sulphide **[Board Term-II 2016, Set-06P08E8] (3)**

Ans. .....

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R **Q. 6.** Derive the molecular formulae for the following compounds :

(i) Copper (II) bromide

(ii) Ammonium carbonate

(iii) Aluminium oxide. **(NCERT Exemplar) [Board Term-II 2015, Set-FCI0L5A] (3)**

Ans.

R+U **Q. 7.**(i) Name the international organization who approves names of elements.

(ii) Give an example with explanation to show that the law of conservation of mass applies to physical changes also. **[Board Term-II 2015, Set-ES80Q24] (5)**

Ans.

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TOPIC-1
Laws of Chemical Combination, Atom and Molecules, Valency, Chemical Formula of Common Compounds

R Q. 1. Name a non-metal that is tetra-atomic. **[Board Term-II 2012, Set-SC-1073] (1)**

Ans. .....

R Q. 2. Give an example of (i) triatomic, (ii) polyatomic molecules of elements.

[Board Term-II 2012, Set-SC-1007] (1)

Ans. .....

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R Q. 3. Write an example of polyatomic molecule. **[Board Term-II 2012, Set-47009, 17] (1)**

Ans. .....

R Q. 4. (i) Write down the name of compounds represented by the following formulae :

(i) $Ca(OH_2)$ (ii) K_2SO_4

(ii) Give two examples of bivalent cations. **[Board Term-II 2011, Set-A] (NCERT) (2)**

Ans. .....

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R Q. 5. Write the chemical symbols of the following elements : Gold, Copper, Potassium, Silver, Platinum and Iron. **[Board Term-II 2014, Set-804ASR9] (3)**

Ans. .....

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R Q. 6. Write the chemical formulae of the following :

(i) Aluminium nitrate

(ii) Magnesium hydrogen carbonate

(iii) Sodium sulphate **(NCERT) [Board Term-II 2014, Set-804ASR9] (3)**

Ans. .....

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R+A **Q. 7.** (a) A sample of vitamin C is known to contain 2.58×10^{24} oxygen atoms. How many moles of oxygen atoms are present in the sample ?

(b) Write one word for the following :

(i) In a balanced chemical equation, the sum of the masses of reactants and products remains unchanged.

(ii) A group of atoms carrying a fixed charge on them.

(c) Write chemical formulae of the following compounds :

(i) Sodium phosphate

(ii) Ammonium carbonate

[Board Term-II 2016, Set-77JLDBT] (5)

Ans. .....

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TOPIC-1
Laws of Chemical Combination, Atom and Molecules, Valency, Chemical Formula of Common Compounds

U **Q. 1.** Name the anion and cation that constitute the molecule of magnesium oxide.

[Board Term-II 2012, Set-SC-1004] (1)

Ans. .....

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U **Q. 2.** An element 'X' has a valency 3. Write the formula of its oxide.

[Board Term-II 2012, Set-SC-1005, 47014, 19, 23] (1)

Ans. .....

A **Q. 3.** An element 'X' has a mass number 4 and atomic number 2. Find the valency of X.

[Board Term-II 2012, Set-SC-1008, 47020] (1)

Ans. .....

R+A **Q. 4.** (i) Write the chemical formula of a compound using zinc ion and phosphate ion.

(ii) Calculate the ratio by mass of atoms present in a molecule of carbon dioxide.

(Given : C = 12, O = 16)

[Board Term-II 2011, Set-B] (2)

Ans. .....

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R+A **Q. 5.** (a) Answer the following questions :

(i) Name the scientist who discovered protons.

(ii) What is the charge and mass of a proton ?

(iii) Where is proton located in an atom ?

(b) An atom of an element has atomic mass 28 u and its atomic number is 14. How many neutrons does it have ? Also name the element. **[Board Term-II 2014, Set-804ASR9] (3)**

Ans. .....

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R **Q. 6.** Write the chemical formula of bicarbonates (HCO_3^{-1}) of Na^{+1}, K^{+1}, Al^{+3}, Mg^{+2}, Ca^{+2}, Zn^{+2}.

[Board Term-II 2013] (3)

Ans. .....

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R+U **Q. 7.** (i) If 18 gm of pure water is electrolyzed, 2 gm of hydrogen and 16 gm of oxygen is obtained. Which law of chemical combination is illustrated by this statement ?

(ii) State the law of constant proportion. Illustrate with the help of an example.

(iii) Which postulate of Dalton's atomic theory is the result of law of conservation of mass ?

(iv) Which point of Dalton's atomic theory came from law of constant proportions ?

[Board Term-II 2013] (5)

Ans. .....

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TOPIC-1
Laws of Chemical Combination, Atom and Molecules, Valency, Chemical Formula of Common Compounds

[A] **Q. 1.** Which of the following compounds have polyatomic ions ? NaOH, NaCl, Na_2O, $NaNO_3$
[Board Term-II 2012, Set-47001] (1)

Ans. .....

[A] **Q. 2.** Write the atomicity of the following molecules:
(i) H_2SO_4 (ii) CCl_4 **[Board Term-II 2012, Set-47004] (1)**

Ans. .....

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[R] **Q. 3.** Write the symbols of :
(i) Lead (ii) Boron **[Board Term-II 2016, Set-AJM39LT] (1)**

Ans. .....

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[R+A] **Q. 4.** State the law of conservation of mass. If 12 gm of carbon is burnt in the presence of 32 gm of oxygen, how much carbon dioxide will be formed ? **[Board Term-II 2011, Set-A] (2)**

Ans. .....

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[R] **Q. 5.** (i) Write down the chemical formulae of sodium oxide and magnesium hydroxide.
(ii) What are polyatomic ions ? Write one example.
(iii) What is the atomicity of phosphorous and ammonia ? **[Board Term-II 2012, Set-SC-1074] (3)**

Ans. .....

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R+U **Q.6.** (i) How would you differentiate between a molecule of element and a molecule of compound? Write one example of each type.

(ii) Write the chemical formula of baking soda. **[Board Term-II 2012, Set-47008] (3)**

Ans. .....

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U **Q. 7.** When 3.0 gm of carbon is burnt in 8.0 gm of oxygen, 11.0 gm of carbon dioxide is produced. What mass of carbon dioxide will be formed when 3.0 gm of carbon is burnt in 50.00 gm of oxygen? Which law of chemical combination will govern your answer ? State the law. **[Board Term-II 2012, 47021, 28, 31;Board 2011, Term II, Set-B] (5)**

Ans. .....

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TOPIC-2
Atomic and Molecular Masses, Mole Concept, Relationship of Mole to Mass of the Particles and Numbers

R **Q. 1. Define formula unit mass.** **(DDE 2017)**

[Board Term-II 2016, Set-77JLDBT] (1)

Ans. .....

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A **Q. 2.** Calculate the number of moles in 17 gm of H_2O_2. (Atomic weight of H = 1 u, O = 16 u)

[Board Term-II 2011, Set-A] (2)

Ans. .....

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U **Q. 3.** (a) Define atomic mass unit.

(b) Distinguish between molecular mass and molar mass.

(c) Give an example of : (i) diatomic, (ii) triatomic molecule of compounds.

[Board Term-II 2012, Set-SC-1006] (3)

Ans. .....

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R+A **Q. 4.** (i) Explain what do you understand by Avogadro constant ?

(ii) Calculate the number of moles for 56 g of Ne.
(Atomic mass Ne = 20 u)

[Board Term-II 2016, Set-06P08E8] (3)

Ans. .....

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R+U **Q. 5.** (a) Write the chemical formula and name of the compounds formed between :

(i) Barium and nitrate ions

(ii) Ferrous and sulphide ions

(b) State the law of definite proportion.

(c) Calculate the number of moles for the following :

(i) 36 gm of water

(ii) 4 gm of oxygen gas

(NCERT)

Atomic number of oxygen and hydrogen is 16 u and 14 u respectively.

[Board Term-II 2012, Set-SC-47027] (5)

Ans. .....

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TOPIC-2

Atomic and Molecular Masses, Mole Concept, Relationship of Mole to Mass of the Particles and Numbers

R Q. 1. Define the atomic mass unit. **[Board Term-II 2012, Set-SC-1075, 47005, 47012, 47030] (1)**

Ans. .....

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R+A Q. 2.(a) Write the chemical formula of potassium sulphate.

(b) Calculate the molar mass of :

(i) Ethyne (C_2H_2).

(ii) Phosphorous molecule (P_4) (Atomic mass of C = 12 u, H = 1 u and P = 31 u). **[NCERT]**

[Board Term-II 2011, Set-A] (2)

Ans. .....

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A Q. 3. (i) What is Avogadro's constant ?

(ii) Calculate the number of particles present in 56 gm of N_2 molecule.

[Board Term-II 2012, Set-SC-1073] (3)

Ans. .....

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R+A **Q. 4.** Define formula unit mass. Calculate formula unit mass of NaCl, (Atomic mass of Na = 23 u, Cl = 35.5 u) **(NCERT) [Board Term-II, 2013] (3)**

Ans. .....

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R+U **Q. 5.** (i) What do the following symbols / formulae stand for :

(a) 2O (b) O_2

(c) O_3 (d) H_2O ?

(ii) Give the chemical formula of the following compounds :

(a) Potassium carbonate

(b) Calcium chloride

(iii) Calculate the formula unit mass of $Al_2(SO_4)_3$.

(Given : Atomic mass of Al = 27 u, S = 32 u, O = 16 u)

[Board Term-II 2012, Set-SC-47019; SC-1005] (5)

Ans. .....

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TOPIC-2
Atomic and Molecular Masses, Mole Concept, Relationship of Mole to Mass of the Particles and Numbers

U **Q. 1.** Interpret the number of moles of oxygen atoms in PO_4^{3-}. **[Board Term-II 2015, Set-E580Q24] (1)**

Ans. .....

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R+A **Q. 2.** (i) Write the chemical formula of magnesium hydroxide.

(ii) Calculate the number of aluminium ions present in 0.051 g of aluminium oxide [Atomic Mass of Al = 27 u] **[Board Term-II 2016, 2012, Set-77JLDBT] (3)**

Ans. .....

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A **Q. 3.** Calculate the number of moles present in :

(i) 60 g of calcium

(ii) 3.011×10^{23} number of oxygen atoms.

(Given that Ca = 40 u, Avogadro's number = 6.022×10^{23} per mole)

[Board Term-II 2012, Set-SC-1008] (3)

Ans. .....

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A **Q. 4.** Verify by calculating that :

(i) 5 mole of CO_2 and 5 mole of H_2S do not have the same mass.

(ii) 240 gm of Ca and 240 gm of Mg elements have molar ratio 3 : 5.

(Atomic mass of C = 12 u, O = 16 u, H = 1 u, S = 32 u, Ca = 40 u, Mg = 24 u)

[Board Term-II, 2013] (5)

Ans.

A **Q. 5.** (i) Calculate the number of atoms of hydrogen present in one dozen molecules of hydrogen gas. Convert the given number of hydrogen in terms of number of moles.

(ii) If hydrogen combines with oxygen in the ratio of 1 : 8 by mass to form water, how many moles of oxygen would be required for the given amount of hydrogen gas? (Atomic mass of H = 1.0 u, O = 16.0 u)

[Board Term-II 2012, Set-47010] (5)

Ans.