**Assignment**
**2011-2012**

**CLASS IX CHEMISTRY**

**S.A. II**

# Atoms and molecules

**Q1)Calculate the % of Nitrogen in urea($NH_2CONH_2$).**

**Q2)Law of conservation of mass was discovered by**
(a) Dalton (b) Proust (c) Lavosier (d) Richter

**Q3)Two elements X&Y combine in a gaseous state to form XY in the ratio of 1: 35.5 by mass. The mass of Y which combines with 2gram of X will be**
(a) 7.1 gram (b) 3.55 gram (c) 35.5 gram (d) 71 gram

**Q4) Match the following:-**

| Column I | Column II |
|---|---|
| 1 . Sodium | a. Yellow in colour |
| 2 . Helium | b. Diatomic |
| 3. Sulphur | c . Soft metal |
| 4. Hydrogen | d. Noble gas |

**Q 5 )Give one word for the following:-**
(a) Metal present in haemoglobin.
(b) Reddish brown metal used in making electrical wires.

**Q 6) Write correct formulae using given ions.**

| **anions** / **cations** | $SO_4^{2-}$ | $Cl^-$ | $PO_4^{3-}$ | $O^{2-}$ | $CO_3^{2-}$ | $OH^-$ | $S^{2-}$ |
|---|---|---|---|---|---|---|---|
| $Na^+$ | | | | | | | |
| $Cu^{++}$ | | | | | | | |
| $Al^{3+}$ | | | | | | | |

**Q 7) What happens when : --**
(a) Solution of sodium chloride and silver nitrate are mixed together.
(b) Solution of barium chloride and sodium sulphate react together.

**Q8) Calculate the molecular mass of $CuSO_4.5H_2O$**
[ Cu=63.5 u,S=32 u,O=16 u,H=1 u.]

**Q9) The % of three elements calcium, carbon & oxygen in a sample of calcium carbonate is given as:--**

**Ca=40.0%,C=12.0%,O=48.0%**
**If the law of constant proportion is true, what weights of these elements will be present in 1.5 gram of another sample of calcium carbonate?**

**Q10) What are the features of the Dalton's Atomic theory? Also mention the limitations of the theory .**

**Q11) Mention four elements which start with the letter B.**

**Q12) Write the name and symbol of two noble gases.**

**Q13) What do you mean by molar mass? Calculate the molar mass of sugar? ($C_{12}H_{22}O_{11}$).**

**Q14) What do you mean by formula unit mass? Calculate the formula unit mass of potassium carbonate($K_2CO_3$).**

**Q15) Calculate the number of moles in:--**
(i) 28 gram of He (ii) 60 gram of Ca.

**Q16) Calculate the mass of:--**
(i) $3.011 \times 10^{32}$ atoms of O. (ii) $6.022 \times 10^{23}$ molecules of $O_2$.

**Q17) Calculate the number of moles of iron in a sample containing $10^{22}$ atoms of iron?**

**Q18)Calculate the weight of carbon monoxide having the same number of oxygen atoms as present in 22 gram of carbon dioxide?**

**Q19) What is the mass in 'u' of 10 moles of sodium sulphate?**

**Q20) What do you mean by Gram molecular mass? Calculate the mass of 0.72 gram molecule of $CO_2$?**

## Structure of the Atom

**Q 1) Element having no neutron in its nucleus is**
(a) Hydrogen
(b) Nitrogen
(c) Helium
(d) Boron

**Q2) Plum and pudding model of atom was put forward by**

(a) Goldstein
(b) Bohr
(c) Thomson
(d) Rutherford

**Q3) Rutherford's alpha particle scattering experiment showed that:**
**(i) electrons have negative charge.**
**(ii) the mass &positive charge of the atom is concentrated in the nucleus.**
**(iii) neutron exists in the nucleus.**
**(iv) most of the space in an atom is empty.**

**which of the above statements are correct?**
(a) (i) & (iii)
(b) (ii ) & (iv)
(c) (i) & (iv)
(d) (iii ) & ( iv)

**Q4) The outermost shell can not have more than**
( a ) 1 e ( b ) 4 e ( c ) 6 e ( d ) 8 e

**Q5) In a sample of ethyl ethanoate ($CH_3$ COO $C_2$ $H_5$) the two oxygen atoms have the same no. of electrons but different number of nuetrons. Which of the following is the correct reason for it?**

( a ) one of the oxygen atom has gained electrons.
( b ) one of the oxygen atom has gained two neutrons.
( c ) the two oxygen atoms are isotopes
( d ) the two oxygen atoms are isobars.

**Q 6 ) Which metal foil was used by Rutherford in his experiment for the discovery of nucleus?**

**Q 7 ) Write the value of charge on electron in coulomb.**

**Q 8 ) What do you mean by shell or orbit? Write the Electronic Configuration of Potassium.**

**Q 9 ) Compare the properties of electrons, protons and neutrons in terms of mass , charge & position.**

**Q 10 ) Name an element which has two valence electrons and is a noble gas?**

**Q 11 ) What are cathode rays and anode rays?**

**Q 12 ) What are isotopes? Give two examples.**

**Q 13 ) How is the valency of an atom is related to its electronic configuration?**

**Q 14 ) If bromine atom is available in the form of two isotopes $^{79}Br_{35}$ ( 49.7 % ) and $^{81}Br_{35}$ (50.3%), calculate the average atomic mass of bromine atom.**

**Q 15 ) The average atomic mass of a sample of an element "X" is 16.2 u. What are the percentages of isotopes $^{16}X_{8}$ and $^{18}X_{8}$ in the sample?**

**Q 16 ) Mention any two applications of isotopes.**

**Q 17 ) An isotope of Lead has mass no. 211 & atomic no. 82. ( $^{211}Pb_{82}$ ).During radioactive disintegration, it gets converted in to an element whose mass number remains the same but atomic number increases by one. Will the end product be an isobar or not?**

**Q 18 ) What are the no. of protons, neutrons& electrons present in $^{59}Co_{27}$ and $^{108}Ag_{47}$?**

**Q 19 ) State the new concepts incorporated by Neil Bohr in his proposed model of an atom. Draw a diagram to illustrate this model.**

**Q 20 ) Describe Rutherford model of Atom & mention the drawbacks of the model as well.**

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