**Indian School Al Wadi Al Kabir**

**Department of Science 2018 -19**

**CLASS IX**

**WINTER – HOLIDAY ASSIGNMENT**

**Solve the following worksheets: -**

**Physics – Gravitation –Please refer to the school website – worksheet folder.**

**Chemistry – Atoms and molecules – Please refer below:**

**Biology – Diversity in living organisms – Please refer below:**

**CHEMISTRY – ATOMS AND MOLECULES**

**BASIC LEVEL QUESTIONS**

1. What is an atom ?
2. Who coined the term ‘ATOM’? (Democritus)
3. What is Law of conservation of mass ?

**INTERMEDIATE LEVEL QUESTIONS**

4)State the law of constant proportions . Give one example to illustrate this law?

5)State the postulates of Dalton`s atomic theory of matter ?

6)Define the atomic mass unit ? (One atomic mass unit is a mass unit equal to exactly 1/12 th of the mass of an atom of carbon-12)

1. Define molecule ?( A molecule can be defined as the smallest particle of an element or a compound that is capable of an independent existence and shows all the properties of that substance.)
2. How does an atom differ from a molecules ? ( An atom is the smallest particle of an element which may or maynot have independent existence. Molecule is the smallest particle of the element or compound which is capable of independent existence. Eg: Helium(He) is an atom and can exist as such, where as hydrogen atom (H) cannot exist as such but exists as a molecule. )
3. What is valency ?
4. What is relative formula unit mass?

11)Find the formula unit mass of 1) CH4 ( ans-( 1x12+ 4x1 = 16 u))

2) H2SO4( ans- (1x2+ 1x32+ 16x4 =98 u))

**ADVANCED LEVEL QUESTIONS**

1. Write an example of a polyatomic molecule. (ans—any molecule containing more than four atoms, eg: sulphuric acid(H2SO4) )
2. What is the difference between 2H and H2 ? ( ans -- 2H means two atoms of hydrogen whereas H2  means one molecule of hydrogen )
3. An element “X” has valency3 .write the formula of its oxide . ( ans—valency of X=3: formula of its oxide = X2O3)
4. Separate the following elements to atoms and molecules :

Oxygen,nitrogen,argon,sodium,neon,chlorine .

( ans----Atoms : argon,sodium,neon

Molecule :oxygen,nitrogen,chlorine )

1. What is the difference between cation and anion ?
2. Write down the formulae of
3. Sodium oxide
4. Aluminium chloride
5. Magnesium hydroxide

ans…a) Na2O b) Alcl3 c) Mg(OH)2

1. Calculate the molecular mass of the following a) HNO3 b) CH3COOH

( atomic mass of H=1 , N=14 ,O=16 , C=12 )

Ans----a) 63g b) 60 g

1. Calculate the number of particles in each of the following :
2. 7 g of nitrogen molecules,
3. 0.5 mole of carbon atoms

(given : N=14u , C =12u , N0 = 6.022 x1023 )

Ans ---- A) no of molecules = given mass x avagadro no.

Molar mass

= (7x 6.022 x1023)**= 1.505 x** 1023

28

B) Number of atoms = number of moles x avagadros no.

=0.5 x 6.022 x1023=3.011 x1023

**PREVIOUS YEAR QUESTIONS**

1. Write an example of polyatomic molecule.

( sulphur (s8) or phosphorous (p4) )

1. Calculate the number of aluminium ions in 0.051 gm of Al2O3. ( atomic mass of Al =27 u , O= 16 u , , N0 = 6.022 x1023 )
2. Identify the polyatomic ions in the following compounds and compute the molar mass of the compounds. ( given that atomic mass Mg=24 u, C= 12u ,O =16 u ,S=32u ,Na = 23 u )
3. MgCO3 B) Na2SO4

(Ans….polyatomic ions CO32- , SO42-

Molar mass of MgCO3 = 84u , molar mass of Na2SO4 = 142 u )

1. Differentiate between (1) atom and molecule (2) molecular mass and formula unit mass
2. Write the formula of the compounds formed by the following ions
3. (a) Cr3+  and SO42- (b) Pb2+ and NO31-
4. Which has more number of atoms 100 g of sodium or 100 g of iron (At.mass of Na = 23u , Fe = 56 u)

Ans--- A) Cr2(SO4)3 B) Pb(NO3)2

B)

|  |  |
| --- | --- |
| For Sodium | For Iron |
| m=100g  M=23g , n= m/M , 100/23  N=n x N0 = 100/23 x 6.022 x1023  =4.38x 6.022 x1023 | m=100g  M=56g, n= m/M , 100/56  N=n x N0 = 100/56 x 6.022 x1023  = 1.785 x6.022 x1023 |
| 100g of Na has more number of atoms |  |

25)Write any four postulates of Daltons atomic theory ?

**BIOLOGY – DIVERSITY IN LIVING ORGANISMS**

1.What precautions should be taken while preparing a stained temporary mount of onion peel?

2.Give the various steps involved in preparing a temporary mount of human cheek cells.

3.Differentiate between parenchymatous and sclerenchymatous cells.

4.State any two identifying features of cardiac muscle fibres.

5.Students were shown the slide of a neuron.With the help of neat labeled diagram show their

observation.

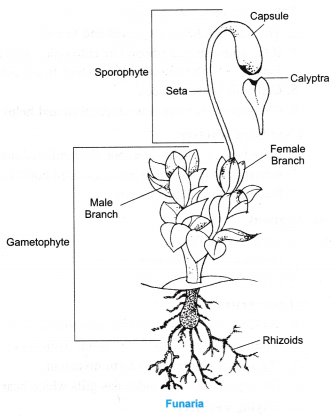
6.Differentiate between skeletal and smooth muclefibres.

7.State any one similarity between cardiac and smooth muscle fibres.Also state any one

difference between the two muscle fibres.

8.Give any two identifying features of spirogyra.

9.observe the given specimen :



i)Name the division to which the plant belongs.

ii)Why is it called “Amphibian of kingdom plantae”?

10.Differentiate between monocots and dicots.

11.Which division consists of the ‘first vascular plants?State any two of their features.

12.What are cryptogams?Name the divisons that come under it.

13.What are phanerogams?

14.What is a thallus?

15.What do you understand by terms reticulate venation and parallel venation?

16.Mention the phylum of the following animals:

a)Earthworm b)Cockroach

17.State any two adaptive features of a bird.

18.What do you understand by the term cold blooded?

19.Give any four aquatic adaptations of fishes.

20.Which type of root system do we find in a pea plant?How is it different from the root system

of bamboo?

Prepared by Mr. Gerard Thomas