

KEY SHEET for SUMMATIVE ASSESSMENT-3

Class :- IX

PHYSICAL SCIENCE

SECTION-I

1. In an experiment to study the speed of diffusion of two gases namely hydrogen chloride and ammonia.

What is the result?

A white dense fumes of Ammonia chloride(NH_4Cl) is formed.

2. Write the reason why a pace bowler in cricket runs in from a long distance before he bowls?

Pace bowler shift the momentum into the ball which is gained by running. As a result the ball attains great velocity.

3. Write an application of isotopes in the field of medicine?

Applications of isotopes :- 1. The isotope of uranium is used as a fuel in nuclear reactors.

2. The isotope of iodine is used in the treatment of goiter.

3. The isotope of cobalt is used in the treatment of cancer.

4. What path will moon takes when the moon stop rotating round the earth?

The moon travels along with the tangential direction or it falls towards the earth because of gravitational attraction of the earth.

SECTION-II

5. Calculate the average speed of Ussain Bolt who sprints 100 m in 9.81 seconds in 2016 Rio Olympics to win Gold Medal?

Given Distance = 100 m.

Time = 9.81 Second.

$$\text{Average Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{100}{9.81} = 10.19 \text{ m/s.}$$

6. Frame two questions to understand Homogeneous mixtures?

1. What is meant by a homogeneous mixtures?

2. Are homogeneous mixtures are separate by filtration method?

3. Which techniques are used to separate homogeneous mixtures?

4. Are homogeneous and heterogeneous mixtures are same?

7. Convert 36 g of water into mole?

Molar mass of Water(H_2O) = $2 \times 1 + 1 = 18 \text{ g.}$

Number of moles of 36 g of Water(H_2O) = $\frac{36}{18} = 2 \text{ moles.}$

8. Consider the following equations of motion and rewrite them for a freely fall body?

For a freely falling body,

Initial velocity, $u = 0 \text{ m/s}$

The acceleration, $a = +g \text{ m/s}^2$

Given first equation, $v = u + at$

$$v = 0 + gt$$

$$v = gt$$

Given second equation, $s = ut + \frac{1}{2} at^2$

$$s = 0 \times t + \frac{1}{2} gt^2$$

$$s = \frac{1}{2} gt^2$$

9. According to scientific concept of the work, two conditions need to be satisfied in order to say that work has been done.

i. A force should act on the object.

ii. The object must be displaced or there must be change in position of the object.

Now complete the table given below?

Situation been done or not	Whether work has	Reason to say work is done or not.
A boy lifting his bag from the ground		
A girl is pushing a huge rock.		

Situation been done or not	Whether work has	Reason to say work is done or not.
A boy lifting his bag from the ground	Work is done	The object is displaced from the ground.
A girl is pushing a huge rock.	Not done	There is no change in position of the huge rock.

SECTION-III

10. Compare the differences between potential energy and kinetic energy?

Kinetic Energy	Potential Energy
1. The energy possessed by a body due to its motion is called kinetic energy.	1. The energy possessed by a body due to its state is called potential energy.
2. Kinetic Energy = $\frac{1}{2}mv^2$	2. Potential Energy = mgh.
3. Its SI unit is joule(J).	3. Its SI unit is joule(J).
4. Kinetic energy is transferred from one body to another.	4. Potential energy cannot be transferred.
5. Examples:- Flowing water, such as when falling from a waterfall.	5. Examples:- Water at the top of a waterfall, before the precipice.

(OR)

Explain the working process and applications of SONAR?

Working process:- 1. In SONAR ultrasonic waves of high frequencies, say 1,000 KHz, are sent in all directions under the water through transmitter.

2. These waves travel in straight lines till they hit an object such as a submarine, a sunken ship, a school of fish, etc.
3. The waves are then reflected, and are received back by the receiver at the observation centre.
4. From the time between sending the ultrasonic wave and receiving its echo, and the speed of sound in sea water, the distance of the object from the observation centre is calculated.
5. Reflections from various angles can be utilized to determine the shape and size of the object.

Applications:- By using the SONAR we find the object such as a submarine, a sunken ship, a school of fish, etc.

11. The phenomenon of change of a liquid vapour at any temperature below its boiling point is called evaporation. rate of evaporation increases with surface area and wind speed but decreases with humidity of the surroundings.

Now answer the following questions?

i. Why do we prefer hot tea in saucer than cup?

ii. Give reason for clothes dry slowly due to rainy season?

iii. The amount of water vapor present in the atmosphere is called?

iv. Give a situation for daily life where we can feel the effect of evaporation?

- i. The surface area of a saucer is greater than a cup. So we prefer hot tea in saucer than cup.
- ii. The rate of evaporation is very slow in rainy season. So clothes dry slowly.
- iii. Humidity.
- iv. Sweating mechanism of our body is the daily life observation of evaporation.

(OR)

Complete the following table? (AS4)

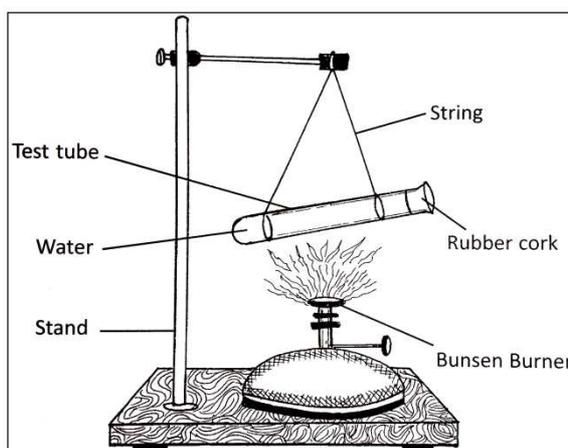
Anion→ ↓Cation	Chloride	Sulphate	Phosphate
Sodium		Na ₂ SO ₄	
Calcium	CaCl ₂		
Aluminium			AlPO ₄
Ammonium			

Anion→ ↓Cation	Chloride	Sulphate	Phosphate
Sodium	NaCl	Na ₂ SO ₄	Na ₂ PO ₄
Calcium	CaCl ₂	CaSO ₄	Ca ₃ (PO ₄) ₂
Aluminium	AlCl ₃	Al ₂ (SO ₄) ₃	AlPO ₄
Ammonium	NH ₄ Cl	(NH ₄) ₂ SO ₄	(NH ₄) PO ₄

12. How do you prove experimentally that action and reaction forces are acting on two different objects?

Aim: To show the action and reaction forces acting on two different objects.

Material required: Test tube, cork cap, Bunsen burner and laboratory stand.



- Procedure:-**
1. Take a test tube of good quality glass and put small amount of water in it.
 2. Place a cork cap at its mouth to close it.
 3. Now suspend the test tube horizontally with the help of two strings as shown in the figure.
 4. Heat the test tube with a Bunsen burner until water vaporize and cork cap blows out.
 5. Observe the movement of test tube when cork cap blows out.
 6. Compare the directions of movement of test tube as well as cork cap.
 7. Observe the difference in the velocity of cork cap and that of recoiling test tube.

Observations:- Both the rubber cap and test tubes are move in opposite direction.

Result:- We find for every action there is equal and opposite reaction.

(OR)

State Archimedes principles? How do you prove it experimentally?

Archimedes' principle:- Archimedes' principle states that when a body is immersed in a fluid it experiences an upward force of buoyancy equal to the weight of fluid displaced by the immersed portion of the body.

Aim:- To prove the archimedes principles experimentally.

Appratus:- Spring balance, overflow vessel, measuring jar, stone and thread etc.

Procedure:- 1. Suspend a stone from a spring balance.

2. Note the reading on the spring balance.

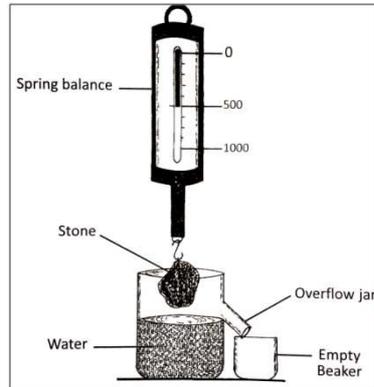
3. The reading gives the weight of the stone.

4. Take an overflow vessel with water and place a graduated beaker below the beak.

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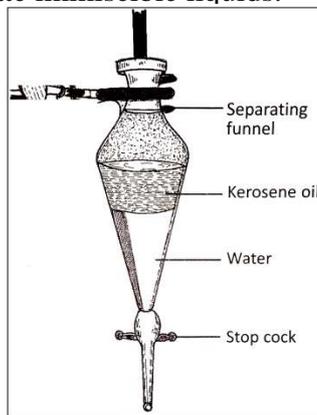
5. Now immerse the stone in the water.
6. Note the reading on the spring balance and measure the volume of water that overflows into the graduated beaker.
7. The reading of the spring balance gives the weight of the immersed stone and the beaker reading gives the volume of water displaced by the stone.

Result:- The apparent loss of weight of the immersed stone is equal to the weight of water displaced by the stone i.e., equal to the force of buoyancy exerted by the water.



13. Name the instrument used to separate the immiscible liquids? Draw the diagram of it taking kerosene and water as immiscible liquids?

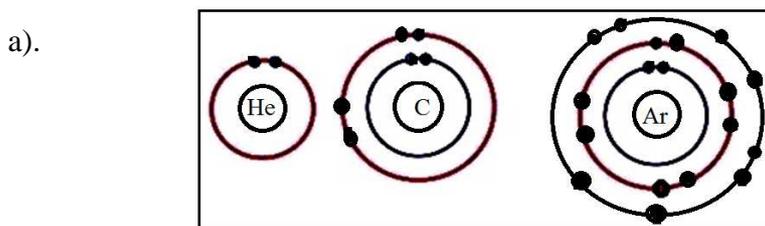
Separating funnel is used to separate immiscible liquids.



(OR)
a). Draw a neat diagram indicating the nucleus and arrangement of electrons in different shells from the following elements?

i. Helium ii. Carbon iii. Argon

b). Which of the above element is unstable? Why?



b). Carbon is unstable because its second shell is not fullfilled.

SECTION-IV

S.No	Ans	S.No	Ans	S.No	Ans	S.No	Ans
14	A	19	D	24	C	29	D
15	A	20	A	25	B	30	B
16	C	21	D	26	B	31	C
17	D	22	D	27	A	32	C
18	C	23	B	28	A	33	C