NEWLY ADDED QUESTIONS ACCORDING TO THE REVISED SYLLABUS FOR THE ACADEMIC YEAR : 2018 – 2019

1. MATTER AROUND US

I. REFLECTIONS ON CONCEPTS

2. Mention the properties of solids.

Ans. 1) Solids have definite mass, shape and volume.
2) They have least kinetic energy of particles.
3) Compressibility and fluidity is not possible.
4) They have heigh density and inter particle forces.
5) They diffuse very slowly.
6) Expansion on heating is very less.
7) They have oscillatory motion of constituent particles.
8) They are high rigid.

3. Mention the properties of liquids.

Ans. 1) Liquids acquire the shape of the container.
2) They have definite volume.
3) Almost negligible compressibility.
4) Less rigid.
5) They diffuse fastly.
6) Packing of particles is less.
7) Inter particle forces slightly weaker than in solids.
8. Expansion on heating is more than solids.

5. Mention the properties of gases.

Ans. 1) Gases acquire the shape of the container.
2) They have indefinite volume.
3) They are highly compressible.
4) The diffuse very fast.
5) Interparticle forces is negligible.
6) They are least closely packed.
7) They are not rigid.
8) Fluidity is more.

6. Give two daily life situation where you observe the diffusion.

Ans. 1) A tea bag placed in a cup of hot water will diffuse into the water.
2) Cigarette smoke diffuses into the air.
3) In leaves, oxygen from the leaf cells diffuses out to the air.
4) In leaves CO_2 diffuses from the air spaces between mesophyll cells to the chloroplast.

II. APPLICATION OF CONCEPTS

1. Mention works where we use compressibility in our daily life ?

Ans. 1) Gas cylinders - gas is compressed and stored in cylinders.
2) Shaving cream is compressed, so it comes outside as a foam.
3) Due to the compressibility only medicines in syringe infected in to our body through needle.
4) Due to the compressibility property only liquids adjust themselves in a container.

2. Mention the situations where we use diffusion in our day-to-day life.

Ans. 1) The mixing of different gases in air is a natural process that takes place continuously.
2) Smoke coming out of factories is seen only near the mouth of chimneys. After rising high it mixes up with air and vanishes out. This happens becaues of diffusion or gases.

3) When salt solution kept in water this makes the whole solution salty after some times. This happens because of diffusion in liquids.

4) Alloys are possible to get prepared because of the diffusion of solid into solid.

Bronze steel, brass are examples of alloy.

4. How do you prove that the speed of diffusion of ammonia is more than that of the speed of diffusion hydrochloric acid ?

Ans. 1) Take one meter long narrow glass tube.

2) Take two pieces of cotton wool.

3) Soak one piece in yhydrochloric acid (HCl) Solution and another in ammonia (NH_3) solution.

4) Insert them separately at the two ends of the tube. Block the ends of the tube and observe.

5) The hydrochloric acid (HCl) gives off (hydrogen chloride (HCl) and ammonia solution (NH_3) gives off ammonia gas (NH_3).

6) Both gases react together to form a white fumes called ammonium chloride (NH_4Cl) (White ring).

7) The ring usually forms nearer to the HCl acid end of the tube because HCl diffuses more slowly than ammonia (NH_3).

8) Thus we can prove the speed of diffusion of NH_3 is more than that of the speed of diffusion of HCl acid.

5. Give examples that the matter which will be available in different states.

Ans. a) Solid state : Ice, glass, rock, most metals, table sugar, frozen CO_2 (dry ice), wood, butter etc.

b) Liquid state : Water, alcohol, milk, mercury, vegetable oil, ethanol, bromine, blood, honey, coffee etc.

c) Gaseous state : Air, helium, nitrogen, water vapour, propane, natural gas, ozone, hydrogen sulphide etc.

6. Draw the diagram showing the experimental arrangement to verify the speed of diffusion of two gases.

Ans.

HCl NH_3

III. HIGHER ORDER THINKING QUESTIONS

1. We can't rejoin the broken chalk easily. Give reason.

Ans. 1) Force of attraction between the particles of the chalk is weak.

2) It is easy to break, but we can't join.

3) To join two materials we need to let the molecules of two get near enough for the coulomb forces to start acting.

4) That's why any solid keeps its shape.

5) Liquids can't keep its shape because the molecular distance in liquids is too large for this action.

2. Is the space between the particles in the matter influence the speed of diffusion ? Explain.

Ans. 1) Space between the particles of gaseous substance is more than solids and liquids.

2) In making of soda water, if we pass CO_2 into water it diffuses fastly.

3) When we try to mix two liquids they also diffuses fastly but when compared to gas to liquid, it take more time to diffuse.

4) If we try to dissolve sugar or salt in water they will take more time to diffuse because the space between particles is very less in solid state substance.

5) So we can conclude that space between gas to liquid particles is more and take more time to diffuse and space between the two liquids particles is more so, they will diffuse speedly.

IV. MULTIPLE CHOICE QUESTIONS

3. In which of the following substance speed of diffusion is more ? (d)

Ans. a) Smell of petrol

b) Smell from flowers

c) Smell from naphthalene balls

d) Gas leaked from gas cylinder

V. SUGGESTED EXPERIMENTS

2. Conduct an experiment to show the space between the particles of matter and write the report.

Ans. 1) take a beaker and fill it with some water and mark the water level.

2) Add some salt and stir it thoroughly with a glass rod.

3) When all the salt has dissolved, we get a salt solution.

4) Observe the level of salt solution in the beaker. We will find that the level of salt solution in the beaker is at the same mark where water level was initially in the beaker.

5) From this activity, we can conclude that both the solid and liquid particles have some space between them and the solid particles enter into the space between the liquid particles whene we dissolves them in liquids.

VI. SUGGESTED PROJECTS

2. What are the factors influencing diffusion, whether the arrangement of atoms in the substance that diffuse or the arrangement of atoms of the medium in which the substance is kept.

Ans. 1) Diffusion depends on both material that is diffusing and the material it is diffusing through.

2) At certain temperature, all particles have the same average energy.

3) This means that lighter atoms, such as hydrogen, carbon, oxygen and nitrogen travel faster and are more mobile than larger atoms such as copper or iron.

4) Materials made of these lighter atoms diffuse faster than heavier materials.

3. Some solids diffuse in liquids but not in gasses, some solids diffuse in gasses but not in liquids. Why ?

Ans. 1) Some solids diffuse in liquids but not in gasses.

2) We take sugar and add it to water it will diffuse in it. But if we keep it in air it won't diffuse.

3) Here diffusion is not going in solids when we keep in air because, the particles in a solid can only vibrate on the spot, rather than being able to move from place to place.

4) Some solids diffuse in gasses because they are sublimators. They won't dissolves in liquids.

4. REFRACTION OF LIGHT AT PLANE SURFACES

V. SUGGESTED EXPERIMENTS

7. Find the critical angle of glass and water with respect to air using activity - 5.

Ans. a) Critical angle of glass with respect to air :

We know from Snell's law

$n_1 \sin i = n_2 \sin r$

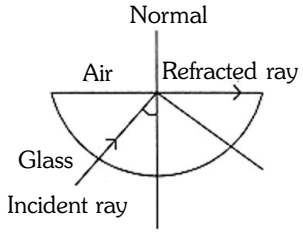
$\Rightarrow \frac{1}{n} = \frac{\sin i}{\sin r}$

$\Rightarrow \frac{1}{n} = \frac{\sin c}{\sin 90^\circ}$

$\Rightarrow \frac{1}{n} = \frac{\sin c}{1}$

$\Rightarrow n = \frac{1}{\sin c}$

$\Rightarrow c = \sin^{-1}\left(\frac{1}{n}\right)$



b) Critical angle of water with respect to air :

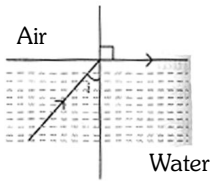
From Snell's law

$n_1 \sin i = n_2 \sin r$

$\therefore$ n. sin c = 1. sin 90°

$\Rightarrow \sin c = \frac{1}{n}$ [$\because \sin 90^\circ = 1$]

(or) $\sin c = \frac{1}{n_{12}}$

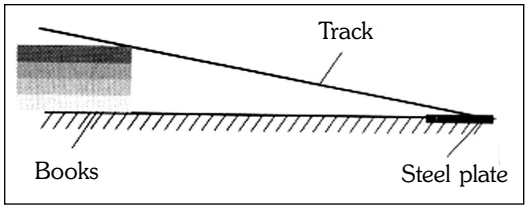


5. GRAVITATION

V. SUGGESTED EXPERIMENTS

2. Conduct an experiment to find $\frac{2s}{t^2}$ value for a freely falling body and also find the value of 'g'.

Ans. Procedure :



1) Take a long plastic tube of length nearly 200cm and cut it in half along the length of the tube.
2) Use these tube parts as tracks.
3) Mark the readings in cm along the track.
4) Place the one end of the tube on the book or books and the other end on the floor as shown in the figure.
5) Keep a steel plate on the floor at the bottom of the track.
6) Consider the reading at the bottom of the track to be zero.
7) Take a marble having enough size to travel in the track freely.
8) Now release marble freely from a certain distance say 40 cm.
9) Start the digital clock when the marble is released.
10) It moves down on the track and strikes the steel plate. Stop the digital clock when a sound is produced.
11) Repeat the same experiment for the same distance 2 and 3 times and note the values of times and calculate the average time 't'.

Distance S (cm)	Time (t) sec	Average time	Acceleration
	t_1 t_2 t_3	$t = \frac{t_1 + t_2 + t_3}{3}$	$a = \frac{2s}{t^2}$

12) Repeat the same experiment for various distances.
13) Find the average time and acceleration for every trail.
14) Do the same experiment for various slopes of the track and find accelerations in each case.
15) Do the same experiment with a small iron block. Find acceleration and draw the S-t graph.
16) From the equation $S = ut + 1/2\, at^2$ (here a = g).

    $\Rightarrow S = 1/2\, gt^2$ ($\because u = 0$) $\Rightarrow g = \frac{2s}{t^2}$
17) We observed that 'g' is constant.

VI. SUGGESTED PROJECTS

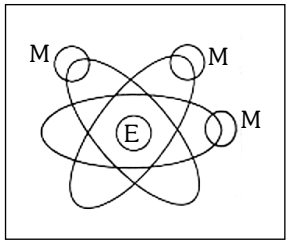
2. Collect information about the path of revolution of moon around the earth and write a report.

Ans. 1) There are several different periods associated with the lunar orbit.

2) The synodic month is the time it takes to make one complete orbit around the Earth with respect to the fixed stars.

3) It is about 27.32 days.

4) The synodic month is the time it takes the moon to reach the same visual phase.



6. IS MATTER PURE ?

IV. MULTIPLE CHOICE QUESTIONS

2. Which is not formed by the physical mixture of two substances is called (a)

a) Mixture b) Compound c)Colloid d) Suspension

VI. SUGGESTED PROJECTS

1. Make a list of solids, liquids and gases from your surroundings. (These substance may be organic or chemical). Separate mixtures from them and classify them into solutions, colloids and suspensions.

Ans. Milk, paint, butter, ruby glass, alcohol in water, salt in water, mercury in silver, silver in gold, flour in water, muddy water.

Solutions	Colloids	Suspensions
Alcohol in Water	Milk	Flour in water
Salt in water	Paint	Muddy water
Mercury in silver	Butter	
Silver in gold	Ruby glass	

8. FLOATING BODIES

III. HIGHER ORDER THINKING QUESTIONS

3. Do all objects that sink in water, sink in oil ? Give reason.

Ans. 1) No, all objects that sink in water, don't sink in oil.

2) Oil is less dense than water as it floats on the surface of anybody of water.

3) Due to the differences in the density of water and oil, some objects which sink in water may float in oil.

4) Some objects which sink in water they too sink in oil also.

5) This is all depending up on the densities of water, oil and substance what we are taking to test.

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