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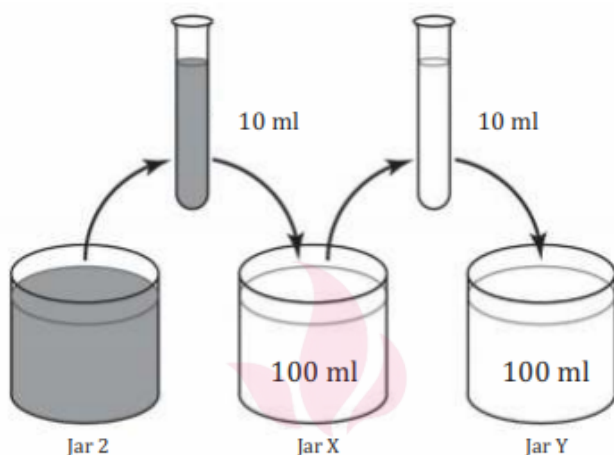
COMPETENCY ASSESSMENT

CLASS - IX

SCIENCE

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Question 1 .Masood took 10 mL of the coloured water from Jar 2 and poured it into 100 mL of plain water in Jar X. He then took 10 mL of the mixture from jar X and poured it into 100 mL of plain water in Jar Y.



He mixed the liquids in jars X and Y.







What would be the likely colour of the liquids in Jar X and Jar Y respectively?

	colour of liquid in Jar X	colour of liquid in Jar Y
A.		
B.		
C.		
D.		

Question 2. Masood wanted to find out which state of a substance dissolves faster in water. He filled two similar glass jars with the same amount of water. Masood added the following substances to the jars of water.

- 10 g of copper sulphate crystal to Jar 1.
- 10 mL of 75% copper sulphate solution to Jar 2.

The table below shows the colour of the water in each jar after specific time periods.

Jar	Colour of water in the jars		
	after 5 minutes	after 30 minutes	after 60 minutes
Jar 1			
Jar 2			

(i) Which statement can be concluded from Masood's activity?

- A. Crystals dissolve partially in water
- B. Liquids dissolve faster than solids in water
- C. Copper sulphate dissolves faster in water than in any other liquid.
- D. Particles of a liquid have a stronger force of attraction than that of a solid.

(ii) Why did Masood use the same amount of water in each jar?

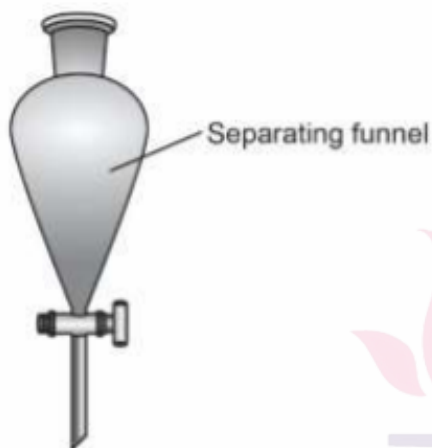
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Question 3. A gas cylinder has the following symbol on its surface.



Which property of the gas is represented by the symbol?

Question 4.



(i) What are the components of a mixture that can be separated using a separating funnel?

- A. Two miscible liquids
- B. Two immiscible liquids
- C. A gas dissolved in a liquid
- D. A solid dissolved in a liquid

(ii) Which of these is an alloy?

- A. Silver
- B. Copper
- C. Bronze
- D. Aluminium

Question 5. The atomic mass of four elements are given below.

	Carbon	Helium	Calcium	Nitrogen
Atomic mass (u)	12	4	40	14

(i) Molar mass is the mass of 1 mole of an element or a compound. Which element has the highest molar mass?

- A. Carbon
- B. Helium
- C. Calcium
- D. Nitrogen

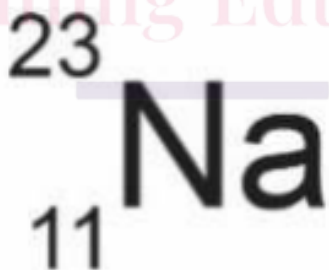
(ii) What is the unit for molar mass?

- A. u
- B. g
- C. mg
- D. kg

(iii) In which of these elements is the mass of 1 mole atom equal to the mass of 1 mole molecule?

- A. H_2
- B. O_2
- C. He
- D. O_3

Question 6. The picture shows the symbol for sodium.



(i) What does the number 23 represent for sodium?

(ii) What can be concluded about sodium from the symbol?

- A. It contains 11 neutrons.
- B. It contains 12 protons.
- C. It contains 12 neutrons.
- D. It contains 34 electrons.

(iii) Which of these statements about the isotopes of an element is correct? Circle 'Yes' or 'No' for the correct response.

Is the statement correct?	Yes or No
The isotopes have the same chemical properties.	Yes / No
The isotopes have the same number of neutrons.	Yes / No
The isotopes have the same number of electrons.	Yes / No

(iv) Which of the following atoms are isobars?

- A. ${}_{6}^{12}\text{C}$ and ${}_{6}^{14}\text{C}$ C. ${}_{6}^{14}\text{C}$ and ${}_{18}^{40}\text{Ar}$
- B. ${}_{18}^{40}\text{Ar}$ and ${}_{20}^{40}\text{Ca}$ D. ${}_{3}^{6}\text{Li}$ and ${}_{6}^{12}\text{C}$

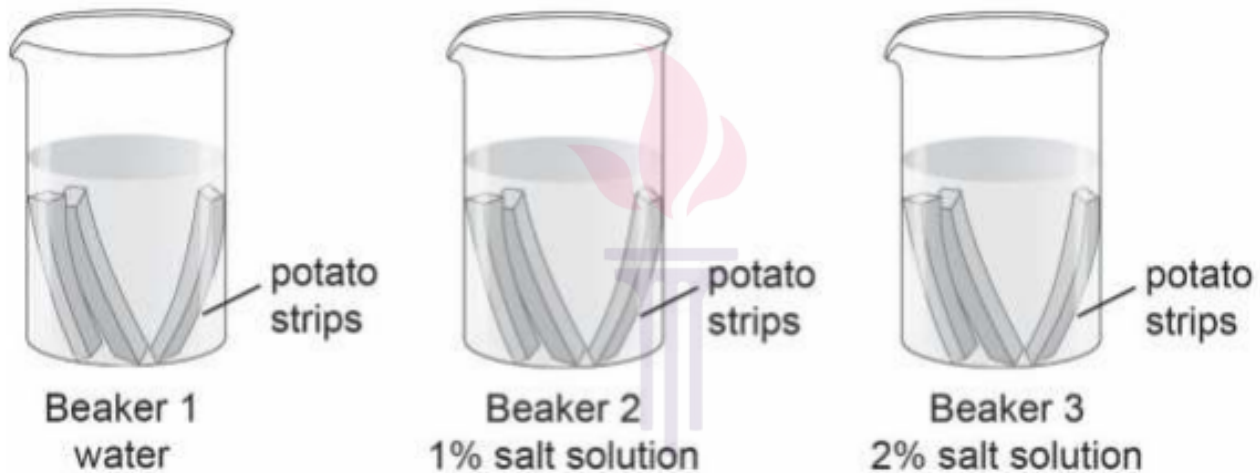
(v) What would be the valency of an element that is chemically inactive?

- A. 0
- B. 1
- C. 2
- D. 5

Question 7. Sania conducts an experiment to know how plant cells lose or gain water through osmosis. She cuts out 5 cm long potato strips. She puts three potato strips in each of the following beakers:

- Beaker 1 containing only water
- Beaker 2 containing 1% salt solution
- Beaker 3 containing 2% salt solution

Sania leaves the potato strips in the beaker for 5 hours.



She records the length of the potato strips in each beaker after 5 hours.

	Length of the potato strip before placing in the beaker (cm)	Length of the potato strip after 5 hours in the beaker (cm)
Beaker 1 water	5.0	5.3
	5.0	5.2
	5.0	5.2
Beaker 2 1% salt solution	5.0	5.0
	5.0	5.0
	5.0	4.9
Beaker 3 2% salt solution	5.0	4.8
	5.0	4.9
	5.0	4.7

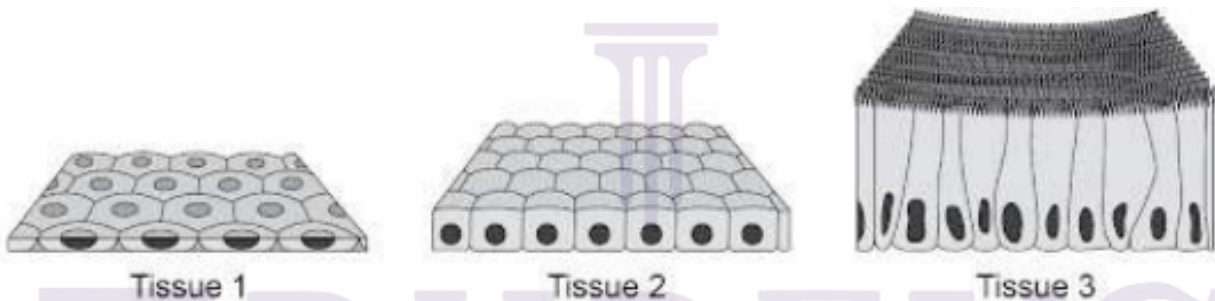
(i) What can Sania conclude from her experiment?

- A. Salt molecules from the cell move out when kept in water
- B. Cells gain water through osmosis when kept in salt solution.
- C. Cells in salt solution first gain water and then gradually lose water
- D. Water molecules move out of the cell based on the amount of salt in the solution.

(ii) In which beaker was the concentration of water molecules inside and outside the potato cells likely to be the same? Explain your answer.

(iii) Why did Sania place three potato strips in each beaker?

Question 8. The picture shows three types of tissues found in the human body



(i) The inner lining of alveoli (air sacs in lungs) is very thin and delicate. Which type of tissue forms the inner lining of alveoli?

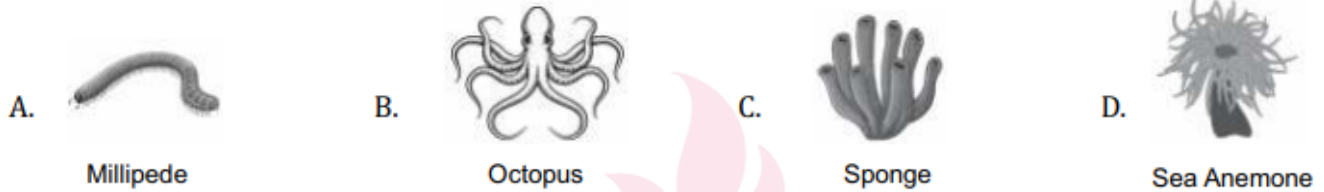
(ii) Which of these cells is the longest?

- A. Bone cell
- B. Nerve cell
- C. Stomach cell
- D. Heart muscle cell

Question 9. Porifera is a group of animals that have the following features.

- They are non-motile and are attached to a solid support.
- They have pores all over the body.
- They are made of only a few types of tissues.

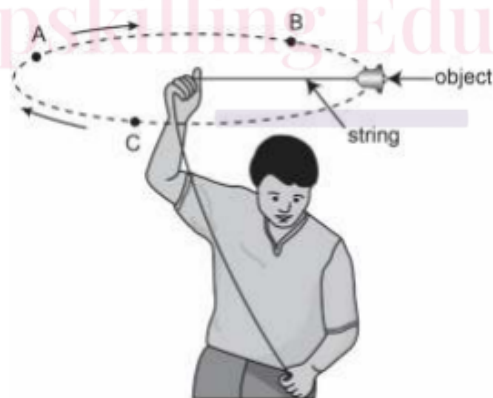
(i) Which of these animals belongs to the Porifera group?



(ii) Which of these features are found in animals that belong to the Aves class?

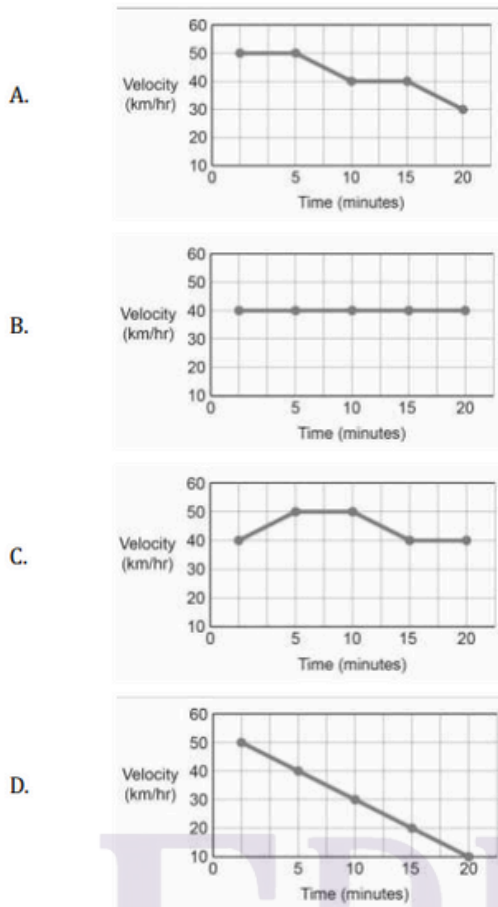
- A. They are cold-blooded.
- B. They breathe through lungs.
- C. They have three chambered hearts.
- D. Their skins have hair and sweat glands.

Question 10. The picture below shows a man swinging an object in a uniform circular motion. A, B and C are three different points on the path of motion of the object.



(i) What is the net displacement of the object after one complete swing?

(ii) Which velocity-time graph shows a period of acceleration in the motion?

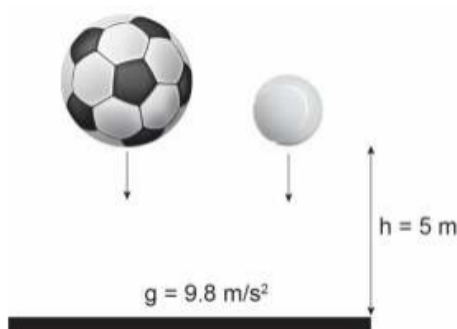


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(iii) What is the correct unit for measuring the acceleration of a moving object?

- A. m
- B. s
- C. m s^{-1}
- D. m s^2

Question 11. A football and a tennis ball fall freely on a marble loor from a height of 5 m



(i) Will the football and the tennis ball hit the floor with the same momentum? Explain your answer.

(ii) Both balls bounced back after hitting the floor. What caused the balls to bounce back?

(iii) Will the balls reach a height of 5 m or less than 5 m after bouncing back? Explain your answer.

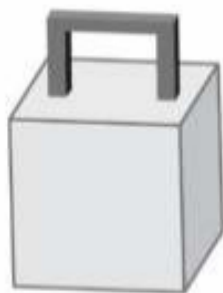
(iv) Which of these will produce the maximum acceleration?

- A. A force of 1000 N acting on a mass of 10 kg
- B. A force of 1000 N acting on a mass of 5 kg
- C. A force of 3000 N acting on a mass of 30 kg
- D. A force of 3000 N acting on a mass of 10 kg

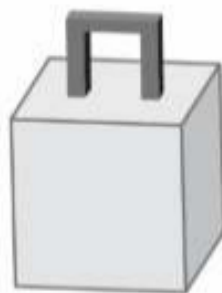
Question 12. Ayesha has four solid boxes. The handles of the boxes are of different thickness and size. All the boxes along with their handles have the same mass.



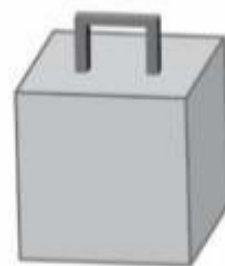
box 1



box 2



box 3



box 4

(i) Ayesha tries to lift the four boxes one by one. A. Box 1 Which box will be the most difficult to lift?

- A. Box 1
- B. Box 2
- C. Box 3
- D. Box 4

(ii) Which box has the most weight?
Explain your answer

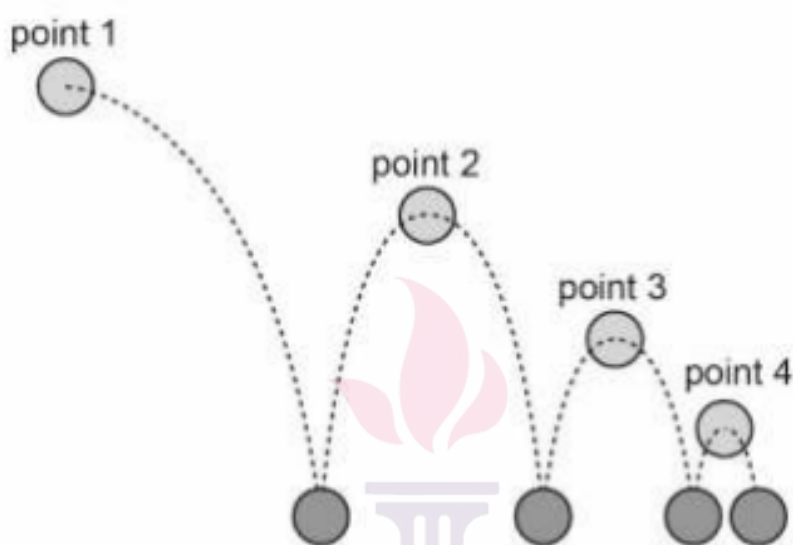
(iii) Which box has the most weight?
Explain your answer.

$$\text{Relative density of an object} = \frac{\text{Density of the object}}{\text{Density of water}}$$

An object floats on water.
What should be the relative density of the object?

(iv) Why is it essential for deep-sea diving vessels to be built of thick sheets of steel?

Question 13. The picture shows a ball bouncing several times before coming to a stop.



(i) At which point was the potential energy of the ball maximum?

- A. Point 1
- B. Point 2
- C. Point 3
- D. Point 4

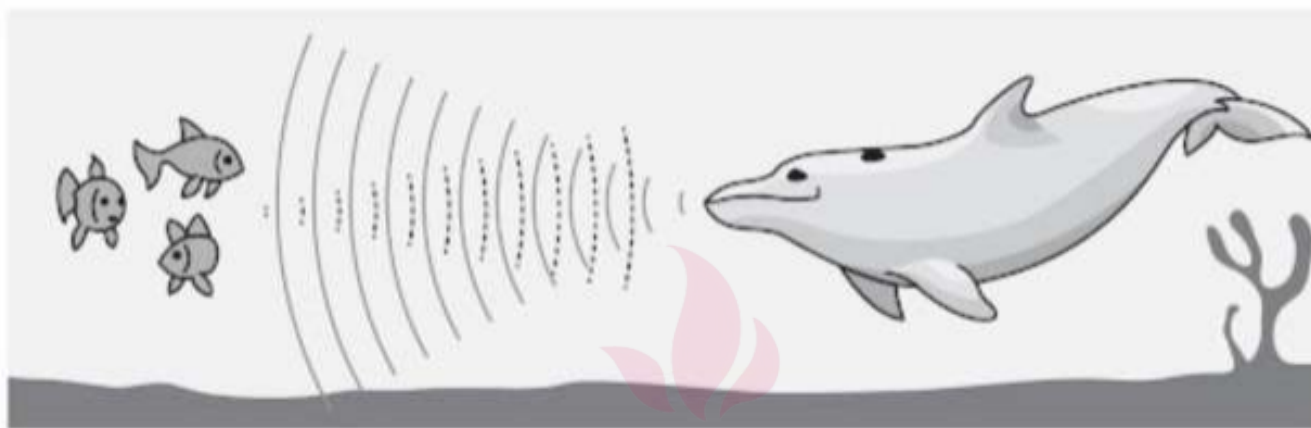
(ii) What would be the shape of the ball at the moment it hit the surface?



(iii) Which of these factors caused the ball to stop bouncing?

- A. Only gravity
- B. Only air resistance
- C. Hardness of the surface and gravity
- D. Conversion of energy and air resistance

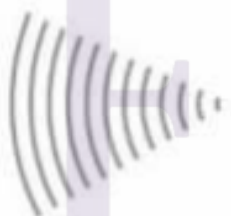
Question 14. Dolphins can locate their prey underwater by using sound waves. They release sound waves that travel, hit the prey and reflect to them.



(i) What do the two types of waves represent?

Use the labels below to fill in the boxes.

- emitted sound waves
- reflected sound waves





(ii) Which of these can the dolphin also find out by using the sound waves? Circle 'Yes' or 'No' for the correct response.

Can the dolphin find this by using the sound waves?	Yes or No
Is there any predator nearby?	Yes/No
Is there any obstacle in the path of its travel?	Yes/No
At what depth from the water surface is it travelling?	Yes/No

Question 15. The table shows the location of the four villages.

Village 1	Village 2	Village 3	Village 4
near a forest	near a sea beach	near a cement factory	near a farmland

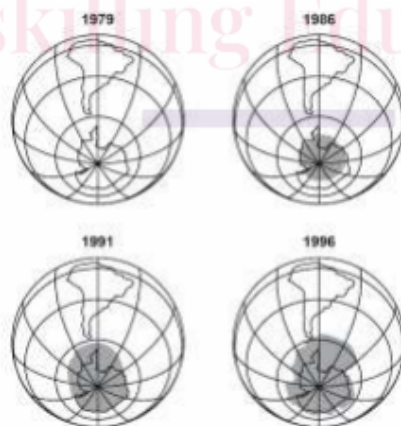
(i) People of which village has the highest chance of developing lung diseases?

- A. Village 1
- B. Village 2
- C. Village 3
- D. Village 4

(ii) Saba often falls ill with common cold. What could be a likely reason for this?

- A. She is underweight.
- B. She swims regularly.
- C. She has weak immunity.
- D. She washes clothes regularly.

Question 16. The pictures show the ozone layer above Antarctica in different years. The dark shade represents a hole in the ozone layer.



(i) What can be concluded about the hole in the ozone layer from the pictures?

- A. It was the largest in 1991
- B. It has decreased after 1986.
- C. It started developing in 1979.
- D. It has increased from 1986 to 1996.

(ii) Which of these will occur with the reduction of ozone layer in the upper atmosphere?

- A. Surface temperature of the Earth will increase
- B. Amount of annual rainfall will decrease globally.
- C. Percentage of oxygen in the atmosphere will decrease.
- D. Harmful radiations from the Sun will reach the Earth's surface.

Question 17. Composite fish culture is a process of growing different types of fish in the same pond.

The diagram shows a composite fish culture pond.



(i) Which of these is true about composite fish culture? Circle 'Yes' or 'No' for the correct response.

Is this true about composite fish culture?	Yes or No
Organic manure provides food for the soil microorganisms.	Yes/No
Some of the fish are scavengers and feed on dead organisms.	Yes/No
The different types of fish can live in similar water temperatures.	Yes/No

(ii) Which of these is a likely advantage of composite fish culture?

- A. Fish grow better when different species live together.**
- B. All areas of the pond are utilized for better fish production**
- C. Fish eat less food when grown in composite culture ponds.**
- D. Dissolved oxygen level is higher in composite culture ponds.**

**(iii) Oysters are cultivated in inland water bodies for food
What else can be obtained from the cultivation of oysters?**

- A. Pearl**
- B. Sponge**
- C. Platinum**

(iv) Why does poultry farming involve crossbreeding between two pure breeds of chicken?

