



# CREST Science Olympiad (CSO)

Previous Year Paper (2022-23)

**Class 8 (Set - A)**

**Time Allowed: 1 hour**

**Maximum Marks: 60**

- Additional **10 minutes** will be allotted to fill up information on the OMR Sheet, before the start of the exam.
- Fill in all the mandatory fields clearly on the OMR Sheet.
- There are a total of **50 questions** in this booklet comprising **2 sections** namely the **Practical Science & Achievers' Section** consisting of **40 questions (1 mark each) & 10 questions (2 marks each)** respectively.
- There is no negative marking. The use of a calculator is not permitted.
- There is **only ONE correct option** to a given question.
- Use **HB Pencil / Ball point pen (Blue / Black) only** for marking the correct choice of answers on the OMR Sheet.
- Rough work is to be done in the space provided in the test booklet. Extra plain sheet may be provided by the school for the rough work.
- The OMR Sheet is to be handed over to the invigilator at the end of the exam.
- No candidate is allowed to carry any textual material, printed or written, bits of paper, any electronic device, digital watches, etc. inside the examination hall.
- The use of unfair means may result in the cancellation of the exam. Any such instances must be reported at **+91-98182-94134** or **info@crestolympiads.com**

**DO NOT OPEN THIS BOOKLET UNTIL ASKED TO DO SO**

**FILL IN THE DETAILS**

Candidate Name: \_\_\_\_\_

Class: \_\_\_\_\_ Section: \_\_\_\_\_

CREST ID: \_\_\_\_\_

## Practical Science (Each Question is 1 Mark)

1. Fill in the blank:

Iron and steel are protected from corrosion by coating them with a layer of zinc. This process is called \_\_\_\_\_.

- a. galvanisation                      b. heating
- c. greasing                            d. painting

2. Iron nails are dipped into blue copper sulphate solution. What will happen after some time?

- a. Iron nails dissolve and the colour of copper sulphate solution changes from blue to light green.
- b. Iron nails are not dissolved but the colour of copper sulphate solution changes from blue to magenta.
- c. Iron nails dissolve and the colour of copper sulphate solution changes from blue to red.
- d. A brown coating of copper is formed on the surface of iron and the colour of copper sulphate solution changes from blue to light green.

3. Which of the following statement is incorrect regarding metals and non-metals?

- 1. All metals are brittle.
- 2. All non-metals are ductile.
- 3. Non-metals are good conductors of electricity.

- a. Only 1
- b. Only 2
- c. Only 1 and 2
- d. 1, 2 and 3

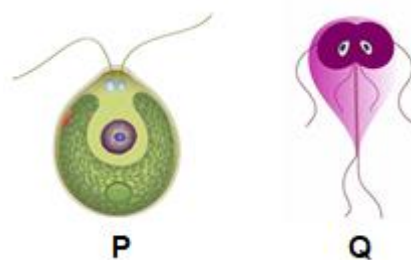
4. In the following question, an assertion and a reason are given. Choose the correct option:

**Assertion:** Weeds are unwanted plants that grow along with the crops.

**Reason:** They compete with the crops for water, minerals and sunlight and therefore reduce crop yield.

- a. Both assertion and reason are true and reason is the correct explanation of assertion.
- b. Both assertion and reason are true, but reason is not a correct explanation of the assertion.
- c. Assertion is correct, but reason is incorrect.
- d. Both assertion and reason are incorrect.

5. Study the given figures and select the correct statements regarding these.
- i. Organism P is a unicellular green algae.
  - ii. Organism Q is a parasitic protozoan.
  - iii. Organism Q causes diseases in human beings
  - iv. Both the organisms P and Q cannot synthesise their own food.



- a. (i) and (ii) only
- b. (ii), (iii) and (iv) only
- c. (i), (ii) and (iii) only
- d. (i), (ii), (iii) and (iv)

6. In the following question, an assertion and a reason are given. Choose the correct option:

**Assertion:** Alcohol and petrol can be used as household fuels for cooking.

**Reason:** They are not highly inflammable substances.

- a. Both assertion and reason are correct and reason is the correct explanation of the assertion.
- b. Both assertion and reason are correct , but reason is not the correct explanation of the assertion.
- c. Assertion is correct , but reason is incorrect .
- d. Both assertion and reason are incorrect.

7. Which of the following statements about mitochondria and chloroplast is not true?

- a. Both mitochondria and chloroplasts provide energy to cells in the same way.
- b. Both mitochondria and chloroplasts have more than one membrane.
- c. Only chloroplast contains the pigment chlorophyll.
- d. Both animal and plant cells contains mitochondria.

8. Which of the following causes phosphate pollution?

- a. Sewage and agricultural fertilizers
- b. Weathering of phosphate rocks only
- c. Agricultural fertilizers only
- d. Phosphate rocks and sewage

9. A cylinder of a certain mass is held in a vertical position. If the height of the cylinder is 10 cm and the radius of the cross-section is 3 cm such that the pressure acting on its bottom surface is  $34820 \text{ N m}^{-2}$ , find the mass of the cylinder:

- a. 10.05 kg
- b. 12 kg
- c. 14.9 kg
- d. 21.8 kg

10. Lily's mother was working in the kitchen. Suddenly, she found that the cooking oil caught fire and to extinguish that, she sprinkles water over it but the fire was not put off.

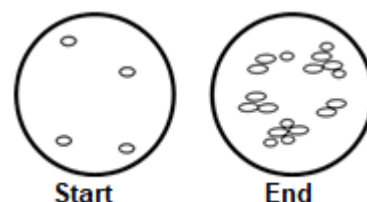
Identify the correct reason(s) for the continuous burning of oil even after sprinkling water:

- I. Oil is lighter than water.
- II. Water is heavier than oil.
- III. Water sinks and oil stays on top and keeps burning.
- IV. Oil sinks and water stays on top and keeps burning.

- a. I and II
- b. II and IV
- c. I and III
- d. I, II and III

11. Leonard placed some single-celled organisms in a cup of water and left it in the open for two weeks. Below are the drawings that Leonard did which show the top view of the organisms at the start and end of the experiment. Leonard observed that the number and size of the organisms increased after two weeks. Which of the following processes could have caused the changes?

- A. Germination
- B. Reproduction
- C. Growth
- D. Condensation



- a. A and B
- b. B and C
- c. C and D
- d. A, B and C

12. Three students made the following statements about sound:

Tom: Human ear drum senses the vibration of sound.

Edward: Higher is the frequency of vibration, lower is the pitch.

Ethan: Amplitude of vibration does not effect the loudness of sound.

Who among them made the correct statement(s)?

- a. Only Tom
  - b. Only Edward
  - c. Only Ethan
  - d. Both Tom and Edward
- 13.** There are various methods of refining metals. Which of the following metals are refined by electrolytic refining?
1. Gold
  2. Copper
  3. Potassium
  4. Sodium
- a. 1 and 2
  - b. 2 and 3
  - c. 3 and 4
  - d. 1 and 4
- 14.** Total amount of heat produced by a fuel having calorific value of 30 kJ/kg was found to be 60,000 joules. How much fuel was burnt?
- a. 3000 kg
  - b. 2000 kg
  - c. 20 kg
  - d. 2 kg
- 15.** Nora collected a few fish from the nearby pond and put it in her aquarium to grow. But after some days, it was observed that one among them showed considerable morphological changes and it developed into a completely different organism. Identify the developmental stages of the organism from the following.
- a. Egg → Larva or caterpillar → Pupa → Adult
  - b. Egg → Larva or tadpole → Adult
  - c. Egg → Nymph → Adult
  - d. Egg → Grub → Pupa → Adult
- 16.** The milk is heated at 70° C for 15-30 seconds. It is then suddenly chilled and stored. The methodology described is a process of preserving milk. What is it called?
- a. Canning
  - b. Dehydration
  - c. Freezing
  - d. Pasteurization
- 17.** Which among the given statements give a correct idea about reforestation?
- a. Planting of trees in an area.
  - b. Reforestation is similar to afforestation.
  - c. Replanting at least same number of trees of the same species in a forest.
  - d. Replanting of a lesser number of trees of same species than that was cut during deforestation.
- 18.** White Blood Cells (WBC) in the human body and amoeba are similar in a few factors. Both have single cell and changes its shape. What is the reason for WBC for changing its shape often?
- a. Like an amoeba, WBC changes its shape for motility and food capture.
  - b. WBC changes its shape only for motility through narrow blood vessels.
  - c. WBC changes its shape according to the stimuli produced by humans.
  - d. WBC changes its shape to engulf bacteria that enter our body.
- 19.** Jessica, after studying the chapter on air pollution, decided to reduce the amount of carbon footprint from her side. What are the ways she can do it? Choose the correct alternative.
- a. She can go to her school in her car.
  - b. She can clean her surroundings by cutting the trees around her home.
  - c. She can go to school by cycle.
  - d. All the above.
- 20.** Choose the correct option and complete the following sentence:  
LED \_\_ (a) \_\_ glow when weak current passes through them. It has two leads

of different length. The longer is connected to \_\_\_(b)\_\_\_ terminal and the shorter is connected to \_\_\_(c)\_\_\_ terminal.

- a. a. can, b. negative, c. positive
- b. a. cannot, b. positive, c. negative
- c. a. can, b. positive, c. negative
- d. a. cannot, b. negative, c. positive

**21.** Which of the following does not get charged by rubbing?

- a. Plastic cover by polythene.
- b. Plastic cover by dry hair.
- c. Wood by wood.
- d. Iron rod by iron rod.

**22.** Yesterday, Peter heard a talk from a resource person saying that we are responsible for the depletion of natural resources. Which among the following did we intentionally or unintentionally deplete?

- a. Nuclear energy
- b. Solar energy
- c. Fossil fuels
- d. Tidal energy

**23.** It has been told since our childhood that Sun rises in the East and sets in the West. But now we know that the Sun does not rise or set. What is then the probable reason for this phenomenon?

- a. Earth revolves around the Sun from West to East
- b. The moon revolves around Earth from West to East
- c. Earth rotates from East to West on its axis.
- d. Earth rotates from West to East on its axis.

**24.** A positive charged rod is brought near an uncharged sphere which stands on an insulating stand. It attracts negative charges which appear on the near side

of sphere and positive charges appear at far side of the sphere. Now the far end is connected with ground. What charge is acquired by the uncharged sphere?

- a. Positive
- b. Negative
- c. No charge
- d. First positive and then negative

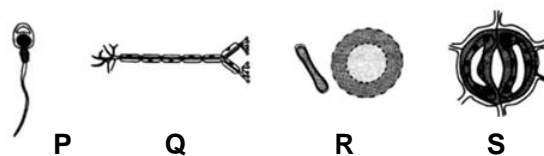
**25.** Few steps of sexual reproductions in animals are given below. Arrange them in the proper sequence:

- i. The male parent produces male gamete (sperms) and female parent produces the female gamete (egg).
- ii. The zygotes divide repeatedly to form a hollow ball of hundreds of cells called an embryo.
- iii. The embryo grows to becomes a foetus.
- iv. The nucleus of the sperm fuse with the nucleus of the egg cell to form a new cell called a zygote.
- v. The foetus grows and become a new individual.

- a. (i), (iv), (ii), (iii), (v)
- b. (i), (ii), (v), (iii), (iv)
- c. (i), (iii), (ii), (v), (vi)
- d. (i), (ii), (iii), (iv), (v)

**26.** The diagram below which shows four types of cells:

Which of these cells can carry out photosynthesis and respiration?



- a. Photosynthesis-S, Respiration-P, Q, R
- b. Photosynthesis-S, Respiration-P, Q, R, S
- c. Photosynthesis-Q, S, Respiration-P, R

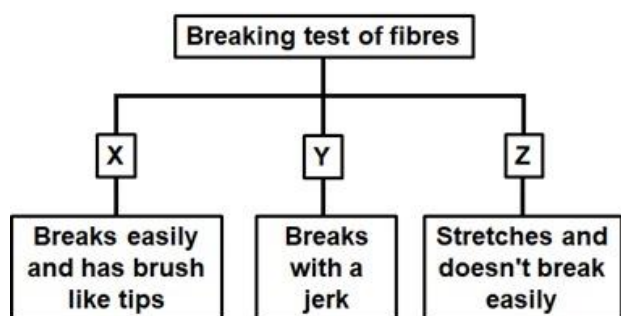
- d. Photosynthesis-Q, S, Respiration-P, Q, R, S

27. A pendulum of a grandfather clock has 20 oscillations in 40 sec.

Find its frequency  $\nu$  and time period  $T$ :

- $\nu = 2 \text{ Hz}$ ,  $T = 0.5 \text{ s}$
- $\nu = 5 \text{ Hz}$ ,  $T = 0.2 \text{ s}$
- $\nu = 0.5 \text{ Hz}$ ,  $T = 2 \text{ s}$
- $\nu = 10 \text{ Hz}$ ,  $T = 20 \text{ s}$

28. Complete the flow chart given below. Identify X, Y and Z:



- X : Nylon, Y : Cotton, Z : Silk
- X : Rayon, Y : Polyester, Z : Nylon
- X : Acrylic, Y : Cotton, Z : Silk
- X : Cotton, Y : Silk, Z : Nylon

29. Students of class 8 suggested various means to save petrol as a part of their project, 'Save Petrol'. From the following students, who gave an incorrect suggestion?

Arya: Drive vehicles at constant and moderate speed.

Arthur: The engines of the vehicles should be switched off at traffic signals.

Emma: Use air-conditioning in the vehicles instead of air vents.

Oscar: Ensure regular maintenance of the vehicle.

- Arthur and Arya
- Arya and Emma
- Only Emma
- Only Oscar

30. Solve the following riddle by identifying W, X, Y and Z.

W: I am used in the manufacturing of

grease, ointment and face wash.

X: I am used in polish and cleaning solution.

Y: I am used in paints and road surfacing.

Z: I am used as solvent in dry cleaning and for heating torch.

- W : Kerosene, X : Petrol, Y : Lubricating oil, Z : Diesel
- W : Naphtha, X : Kerosene, Y : Lubricating, Z : Petrol
- W : Petrol, X : Lubricating oil, Y : Bitumen, Z : Diesel
- W : Paraffin wax, X : Naphtha, Y : Bitumen, Z : Petrol

31. Match the column I with column II:

Column I (Fibres and Plastics)	Column II (Uses)
(i) Nylon	(a) Switchboard
(ii) Rayon	(b) Vehicle covers
(iii) Acrylic	(c) Utensils
(iv) Melamine	(d) Sleeping bags
(v) Bakelite	(e) Bandages
	(f) juice bottle

- (i)-(e), (ii)-(f), (iii)-(a), (iv)-(c), (v)-(b)
- (i)-(c), (ii)-(e), (iii)-(d), (iv)-(a), (v)-(b)
- (i)-(d), (ii)-(e), (iii)-(b), (iv)-(c), (v)-(a)
- (i)-(b), (ii)-(f), (iii)-(c), (iv)-(d), (v)-(a)

32. Fill in the blanks in the given paragraph by choosing the correct option:

There are thousands of irregularly shaped lumps of rocks called \_\_\_\_\_. W\_\_\_\_\_ between the orbits of Mars and Jupiter. \_\_\_\_\_X\_\_\_\_\_ are the chunks of matter originating from W and are on the collision course with the earth. When X enter the earth's atmosphere it forms \_\_\_\_\_Y\_\_\_\_\_. Most of the Y burns in the earth's atmosphere, but if they survive the frictional heat of earth surface they are called \_\_\_\_\_Z\_\_\_\_\_. Identify W, X, Y and Z.



- a. W: Meteoroids, X: Comets, Y: Asteroids, Z: Meteors
- b. W: Meteorites, X: Asteroids, Y: Comets, Z: Meteoroids
- c. W: Asteroids, X: Comets, Y: Meteoroids, Z: Meteors
- d. W: Asteroids, X: Meteoroids, Y: Meteors, Z: Meteorites

**33.** In a beaker of two liquids, solid X floats on liquid Y, but sinks in liquid Z. Which of the following is true?

- a. Liquid Z is water and liquid Y is oil.
- b. Solid X is less dense than liquid Z.
- c. Liquid Y is denser than liquid Z.
- d. Liquid Z is denser than liquid Y.

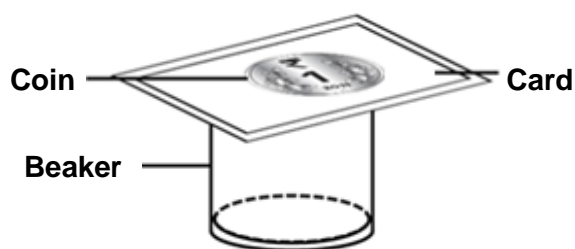
**34.** What does the pressure on a dam wall due to the water at the bottom of a deep reservoir depend on?

- a. The depth of the water
- b. The volume of the reservoir
- c. The surface area of the water
- d. The thickness of the dam wall

**35.** The speed of light increases when it passes from medium X to medium Y. Which of the following statements is correct about this observation?

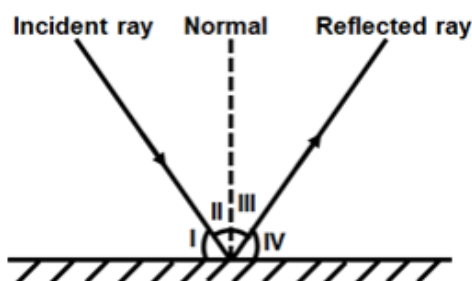
- a. Medium Y is denser than medium X.
- b. The light bends towards the normal.
- c. The light bends away from the normal.
- d. The light does not bend or change its direction.

**36.** A coin is placed on a card on top of a beaker as shown below. If the card is pulled away quickly, the coin does not move sideways but falls into the beaker. Which force exerting on the coin makes this possible?



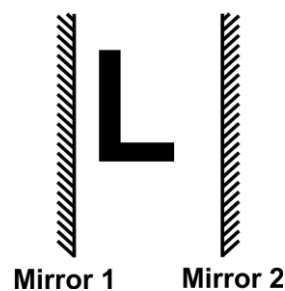
- a. Frictional force
- b. Gravitational force
- c. Magnetic force
- d. Mass of the coin

**37.** Which of the angles shown below is the angle of reflection?



- a. I
- b. II
- c. III
- d. IV

**38.** Choose the correct option and complete the following sentence: The final image seen after two reflections at mirror 1 and mirror 2 respectively will be \_\_\_\_\_.



- a. real, erect and laterally inverted
- b. virtual, erect and laterally inverted
- c. virtual, erect and not laterally inverted
- d. virtual, inverted and laterally inverted

**39.** Beetroot is an underground root tuber that contains lots of red pigment.

Three pieces of beetroot each 60 mm in length are subjected to the following treatments:

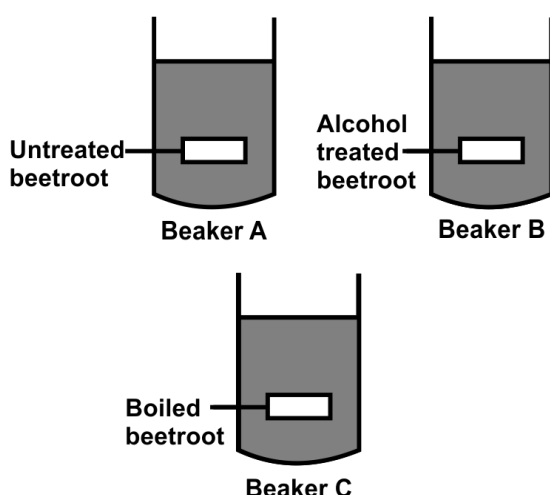
Beetroot A: Untreated

Beetroot B: Alcohol

Beetroot C: Boiled

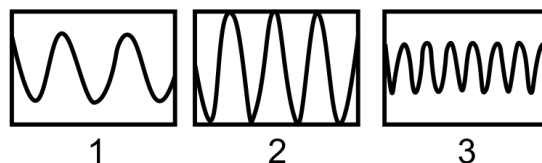
After their respective treatments, the beetroot pieces are placed in beakers of water as illustrated below.

After 30 minutes, the water in all three beakers turned red. Name the process responsible for this change.



- a. Diffusion
- b. Evaporation
- c. Plasmolysis
- d. Osmosis

40. Look at the series of images from an oscilloscope. Image 1 represents the reference sound. Identify the correct statement about the images.



- a. Image 2 represents a higher frequency than 3
- b. Image 3 represents a louder sound than 1
- c. Image 3 represents a higher frequency than 1
- d. Both a and b

## Achievers' Section (Each Question is 2 Marks)

41. The name of a substance is given to a student. He was asked to write the formula.

Arrange the given statements in a proper sequence to obtain the formula:

1. Symbol of positive ion or radical should be placed to the left-hand side and symbol of negative ion should be placed to the right-hand side.
2. Place the valency with a charge of respective radicals on the top right-hand corner of their symbols.
3. Write the symbols of the respective ions or radicals present in the given compound.
4. Criss-cross the valency on the lower right-hand side ions/radicals.
5. A radical consisting of more than one element has to be enclosed

within the brackets if the respective number attained in criss-cross is more than one.

6. No space should be left in between oppositely charged ions while writing the formula.

- a. 3, 1, 2, 4, 5, 6
- b. 4, 3, 6, 2, 5, 1
- c. 4, 1, 3, 2, 4, 6
- d. 5, 6, 4, 2, 1, 3

42. Match the following:

Column I (Alloy)	Column II (Composition)
A. Bronze	1. Lead, Antimony, Tin
B. Brass	2. Copper, Zinc, Nickel



<b>C.</b> German silver	<b>3.</b> Copper, Zinc
<b>D.</b> Type Metal	<b>4.</b> Copper, Tin

- A-1, B-4, C-3, D-2
- A-2, B-1, C-4, D-3
- A-3, B-2, C-1, D-4
- A-4, B-3, C-2, D-1

**43.** Crops are categorized according to their lifespan. Which of the following has a set of annual, biennial and a perennial plant respectively?

- Wheat, Onion, Rose
- Rice gram, Radish, Mango
- Beans, Turnip, Teak
- Guava, Pea, Sunflower

- i, ii and iv
- ii, iii and iv
- iii, iv and i
- i, ii and iii

**44.** Which of the following is/are matched correctly?

	<b>Disease</b>	<b>Causative agent</b>
<b>1.</b>	Foot and mouth	Protozoa
<b>2.</b>	Sleeping sickness	Bacteria
<b>3.</b>	Rust of wheat	Fungi
<b>4.</b>	Tobacco mosaic	Virus

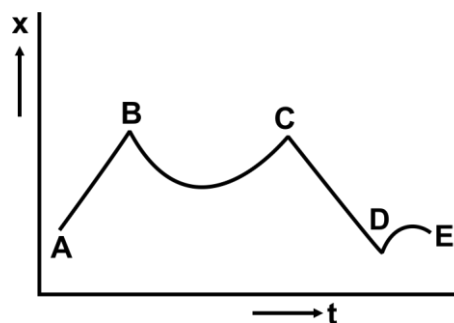
- Only 1
- Only 3
- Both 1 and 2
- Both 3 and 4

**45.** Which of the following should be done for reading small letters with a lens?

- One has to keep a convex lens at a distance between  $F$  and  $2F$  from the book.
- One has to keep a concave lens at a distance less than the focal length from the book.
- One has to keep a concave lens at a distance between  $F$  and  $2F$  from the book.

- One has to keep a convex lens at a distance less than the focal length from the book.

**46.** The figure shows the displacement of a particle going along the X-axis as a function of time. The force acting on the particle is zero in which region?



- AB
- BC
- CE
- DE

**47.** A car is travelling at a constant speed along a road and drives over a large patch of oil. The driver applies the brakes to stop the car. Compared to braking on a dry road, what may happen?

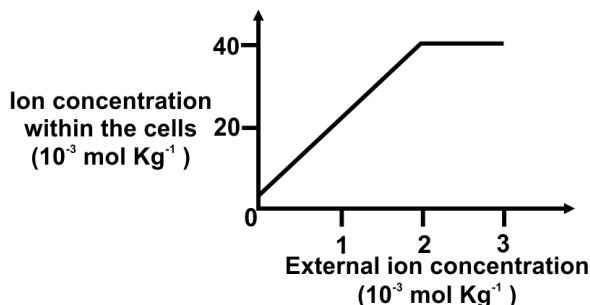
- The car slows down more quickly because of the greater friction between the tyres and the road.
- The car speeds up at first because of the reduced friction between the tyres and the road.
- The car takes longer to slow down because of the reduced friction between the tyres and the road.
- The car slows down first because of the reduced friction between the tyres and the road.

**48.** The graph below shows the effect of the change in the external ion concentration on the ion concentration within some plant cells. Which of the following conclusions can be drawn from the graph?

- The cell membrane becomes impermeable to the ions when the

external concentration reaches 2 units.

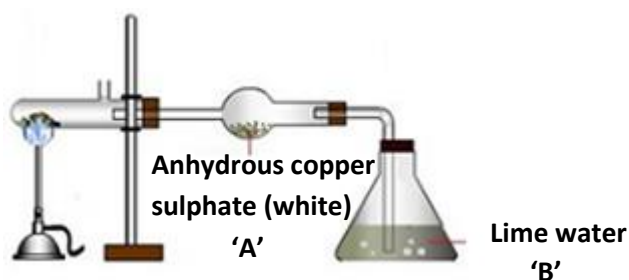
2. The ions are absorbed by the cells against a concentration gradient.
3. The uptake of ions occurs only in living cells.



- a. (1) only
- b. (2) only
- c. (1) and (2) only
- d. (2) and (3) only

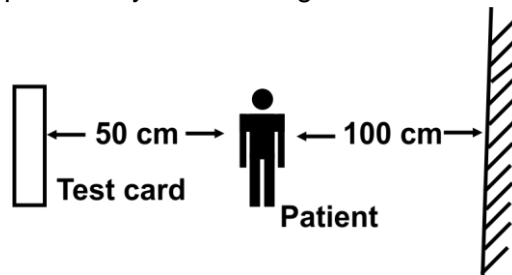
49. Emily made the following setup to identify the product of the combustion of substance X, which is made up of only carbon and hydrogen. She observed that on heating X, the substance of A turns blue and of B turns milky.

The products as identified by Emily on the basis of her observations are:



- a. CO and CO<sub>2</sub>
- b. CO<sub>2</sub> and H<sub>2</sub>O vapours
- c. CO and H<sub>2</sub>O vapours
- d. Liquid H<sub>2</sub>O and H<sub>2</sub>O vapours

50. An optician holds a test card 50 cm behind a patient. The patient, then looks in the plane mirror which is 100 cm away. How far away from the patients eye is the image of test card?



- a. 100 cm
- b. 150 cm
- c. 200 cm
- d. 250 cm

## Answer Key

- |       |       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 1. a  | 2. d  | 3. d  | 4. b  | 5. c  | 6. d  | 7. a  | 8. a  | 9. a  | 10. d |
| 11. b | 12. a | 13. a | 14. d | 15. b | 16. d | 17. c | 18. d | 19. c | 20. c |
| 21. c | 22. c | 23. d | 24. b | 25. a | 26. b | 27. c | 28. d | 29. c | 30. d |
| 31. c | 32. d | 33. c | 34. a | 35. c | 36. b | 37. c | 38. c | 39. a | 40. c |
| 41. a | 42. d | 43. d | 44. d | 45. d | 46. a | 47. c | 48. b | 49. b | 50. d |