

Sample Question Paper III

Time: 1 ½ hours

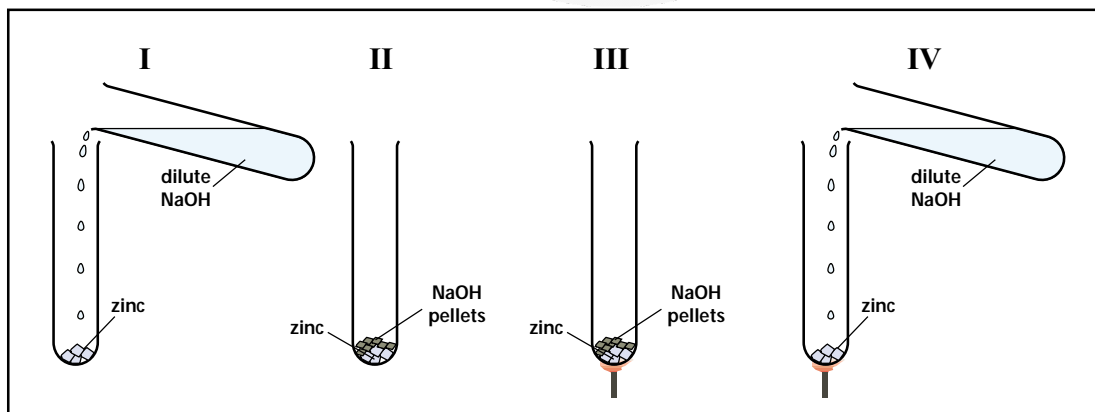
Maximum Marks: 20

INSTRUCTIONS

1. Attempt all questions
2. There are 30 multiple choice questions in total. Only one of the options in every question is correct.
3. The question paper consists of two parts – Section A and Section B. Each of the 20 questions in Section A carries 0.5 mark and each of the 10 questions in Section B carries 1.0 mark.

SECTION A

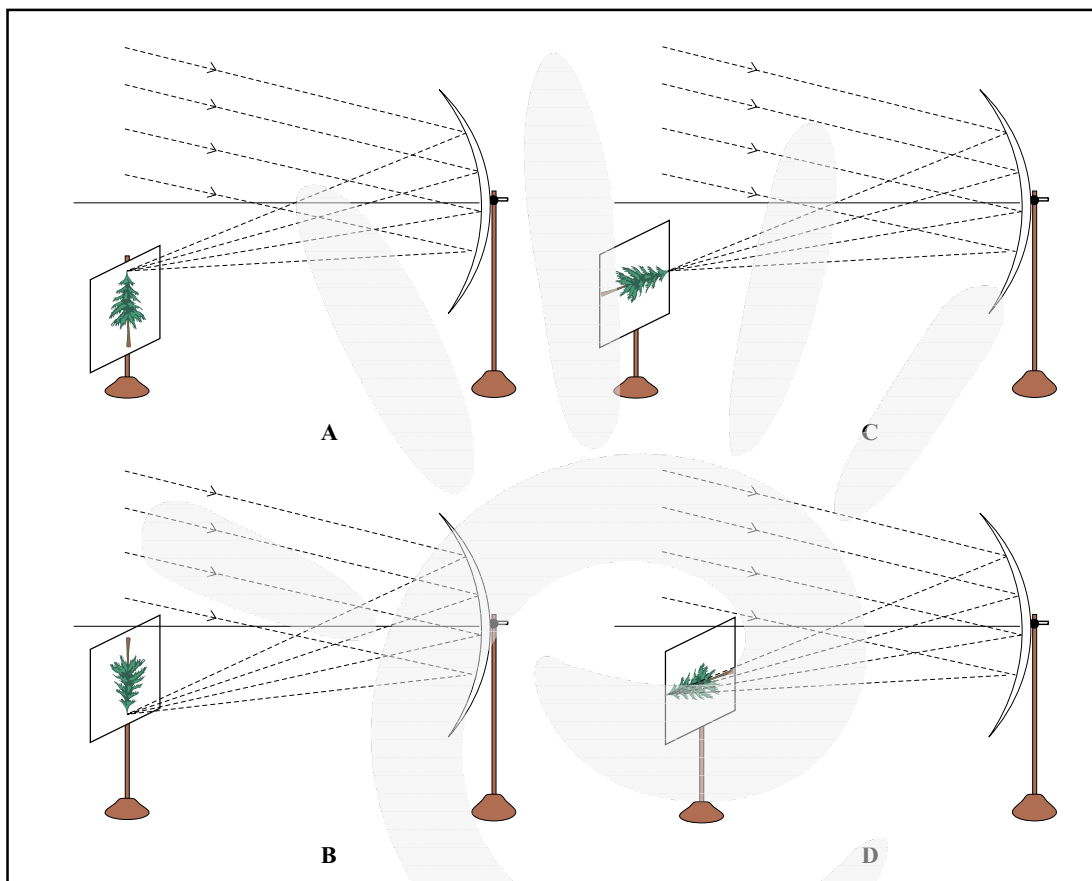
1. A student took the following samples to find out their pH using pH paper. The teacher remarked that one of the samples taken was not proper. The teacher was referring to
 - (a) dilute hydrochloric acid.
 - (b) lemon juice.
 - (c) washing soda.
 - (d) soap solution.
2. To test the presence of an acid with a strip of red litmus paper you would
 - (a) dip the strip as it is in the sample and see the colour change.
 - (b) moisten the paper with water and dip in the given sample.
 - (c) first dip strip in common salt solution and then use to it test the sample.
 - (d) first dip strip in alkaline solution and then use it to test the sample.
3. The figures below show set-ups for studying the reaction of zinc with sodium hydroxide.



A rapid evolution of hydrogen gas will be observed in the test tube

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

4. Parallel rays, from the top of a distant tree, incident on a concave mirror, form an image on the screen.

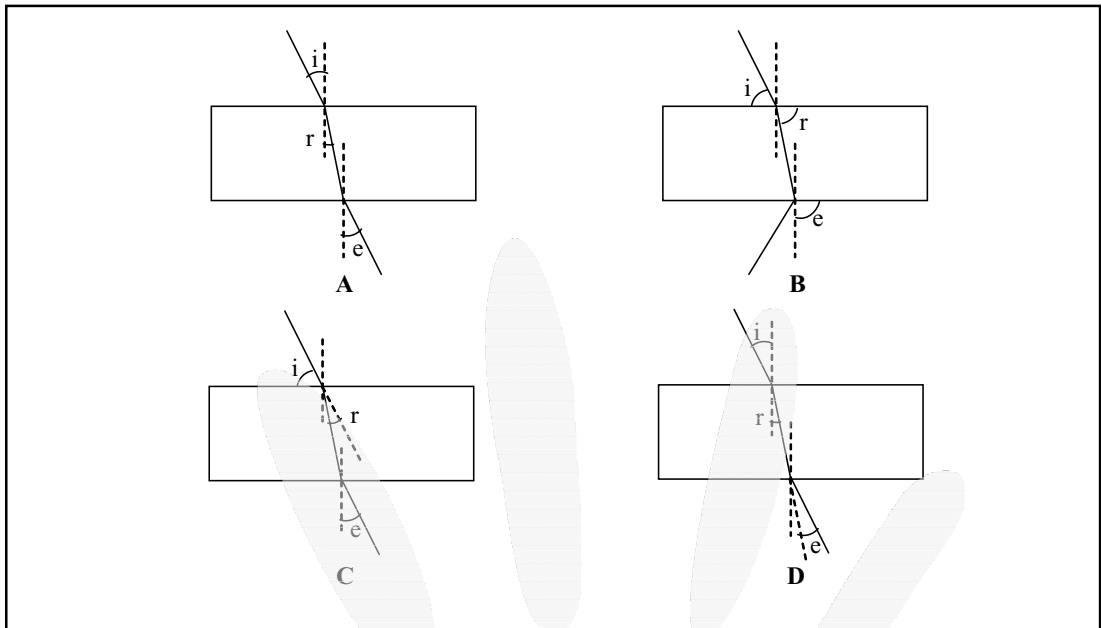


The diagram correctly showing the image of the tree on the screen is

- (a) A.
- (b) B.
- (c) C.
- (d) D.

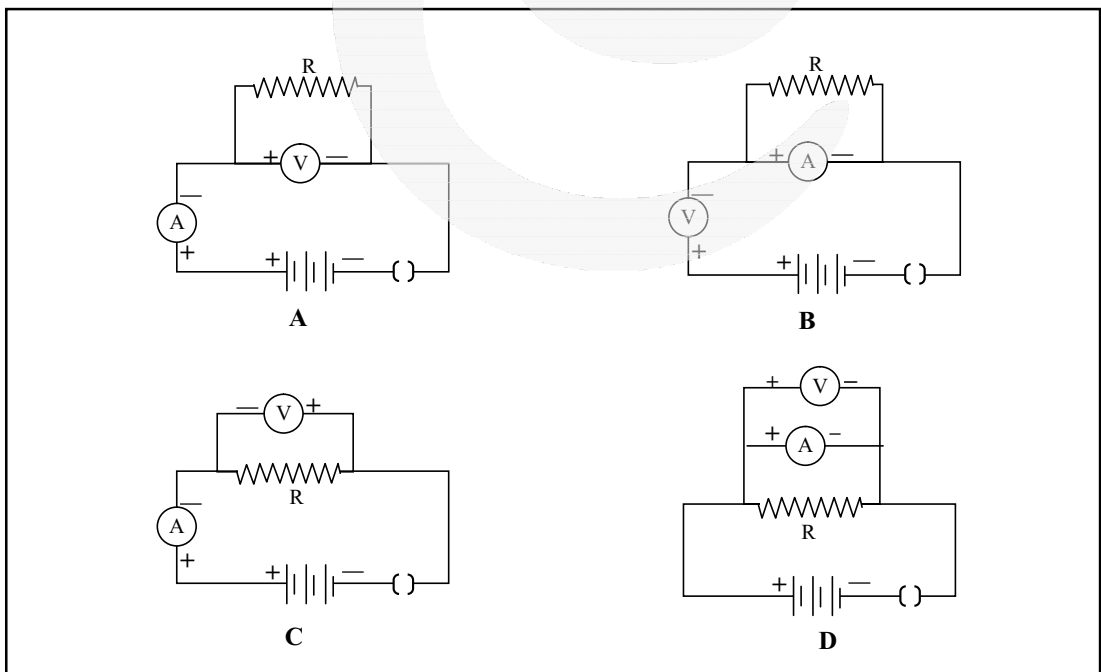
5. In an experiment to trace the path of a ray of light passing through a rectangular glass slab, the correct measurement of angles of incidence (i), refraction (r) and emergence (e) is shown in diagram

- (a) A.
- (b) B.
- (c) C.
- (d) D.



6. The correct set up for studying the dependence of the current on the potential difference across a resistor is

- (a) A.
- (b) B.
- (c) C.
- (d) D.

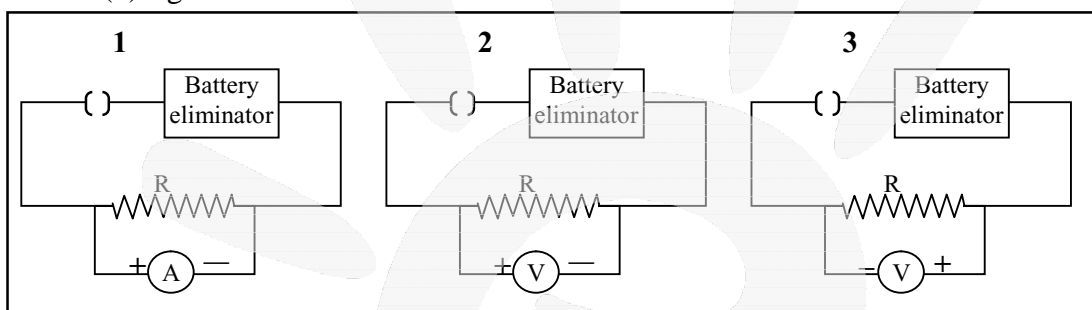


7. In an experiment to determine the focal length of a convex lens, a student obtained a sharp inverted image of a distant tree on the screen behind the lens. She then removed the screen and looked through the lens in the direction of the object. She will see

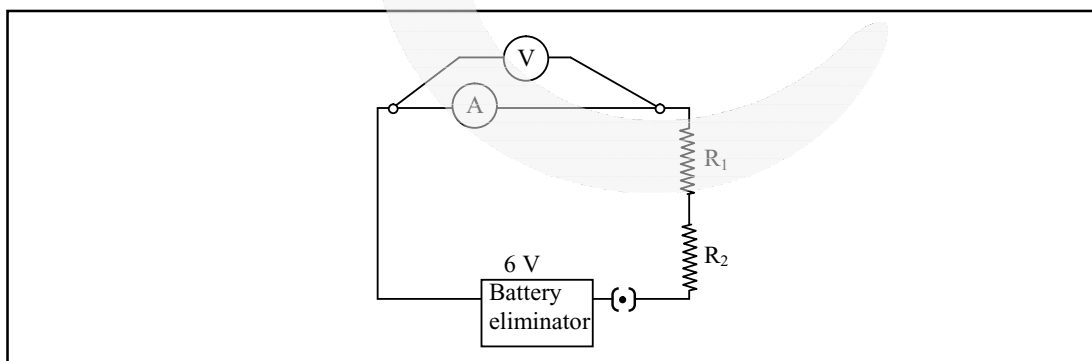
- (a) an inverted image of the tree at the focus of the lens.
- (b) no image as the screen has been removed.
- (c) a blurred image on the wall of the laboratory.
- (d) an erect image of the tree on the lens.

8. The positive and negative terminal markings are missing from a given battery eliminator. The correct terminal markings can be best identified by the arrangement shown in

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



9. In an experiment, to find the equivalent resistance of a series combination of two resistors R_1 and R_2 , a student uses the circuit shown here.



The circuit will give

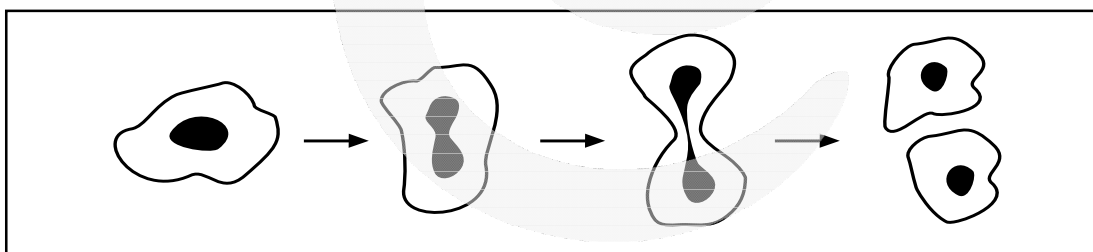
- (a) correct reading for voltage V , but incorrect reading for current I .
- (b) correct reading for current I , but incorrect reading for voltage V .
- (c) correct readings for both current I and voltage V .
- (d) incorrect readings for both current I and voltage V .

10. In an experiment to study dependence of current I on the potential difference across a given resistor, students kept the plug key in the circuit closed for time t_1 and then open for time t_2 . The times t_1 and t_2 for students P, Q, R and S are given in the table below.

Student	Closed time t_1 seconds	Open time t_2 , seconds
P	30	60
Q	60	30
R	60	15
S	45	15

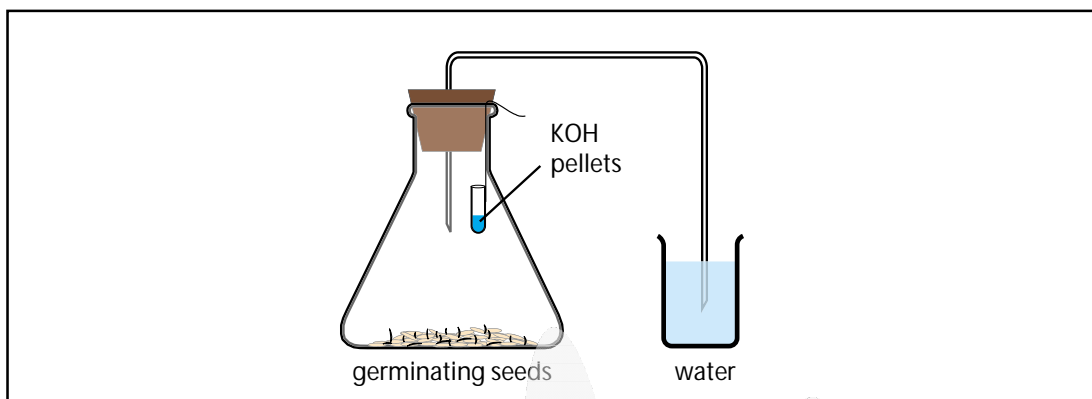
The best choice of open and closed times is that of student

- (a) P.
 - (b) Q.
 - (c) R.
 - (d) S.
11. When students observed a stained epidermal peel of a leaf under the microscope, it appeared pinkish red. The stain used was
- (a) iodine.
 - (b) acetocarmine.
 - (c) safranin.
 - (d) colchicin.
12. The process represented in the diagram below is the



- (a) formation of spores in Amoeba.
- (b) formation of bud taking place in Amoeba.
- (c) identical gametes being formed in Amoeba.
- (d) formation of daughter cells in Amoeba.

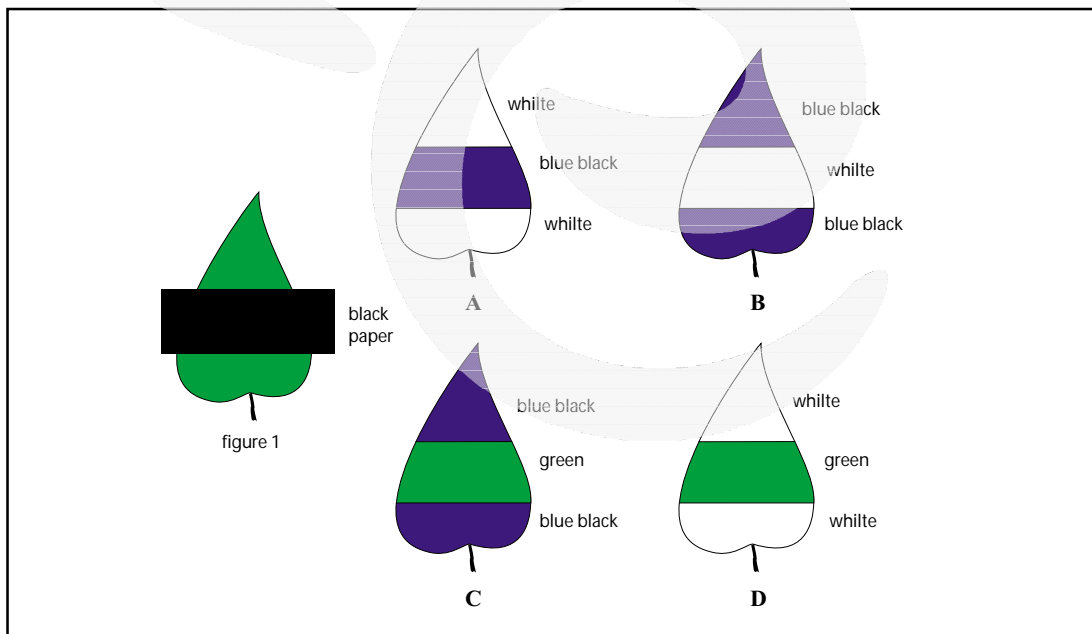
13. The following experiment is set up to show that a gas is released during respiration.



In this set up, the small test tube containing pellets of KOH is kept in the conical flask to absorb

- (a) air in the flask.
- (b) moisture in the flask.
- (c) O_2 in the air in the flask.
- (d) CO_2 released by the germinating seeds.

14. A leaf from a de-starched plant is covered with black paper strip as shown in figure 1. The starch test is done on the leaf after 8 hours.



The results will be as shown in diagram

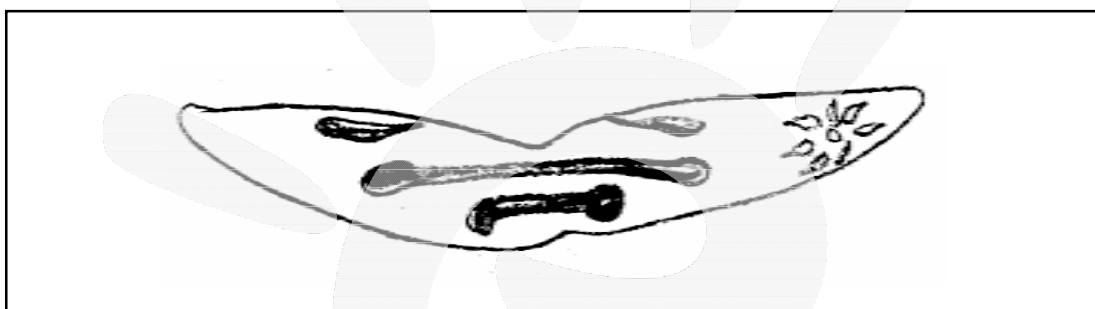
- (a) A.
- (b) B.
- (c) C.
- (d) D.

15. A student dissolved 5 g of sugar in 100 mL of distilled water in beaker A. She dissolved 100 g of sugar in 100 mL of distilled water in beaker B. Then she dropped a few raisins of equal weight in each beaker. After two hours she found the raisins in A swollen and those in B shrunken. The inference drawn is that

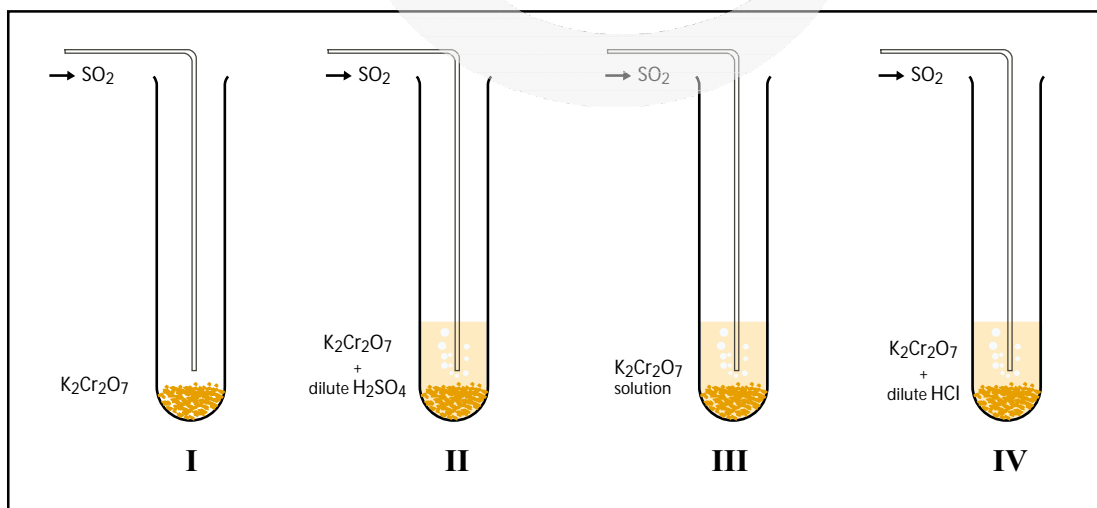
- (a) sugar concentration of raisins is lower than that of solution A and higher than that of solution B.
- (b) sugar concentration of raisins is higher than that of solution A and lower than that of solution B.
- (c) in B the cell membrane of raisins was damaged resulting in leaching.
- (d) in A the permeability to water of the cell membrane of raisins was enhanced.

16. The figure given bellow illustrates the step leading to

- (a) binary fission in Amoeba.
- (b) longitudinal binary fission in Paramecium.
- (c) transverse binary fission in Euglena.
- (d) transverse binary fission in Paramecium.



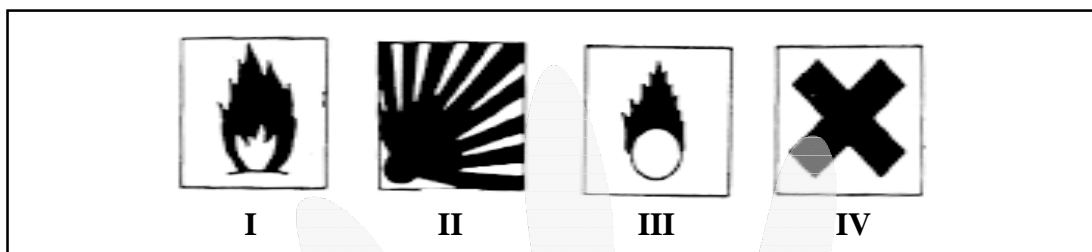
17. Four different arrangements used y students to test the effect of sulphur dioxide on potassium dichromate are shown below.



The correct arrangement is shown in

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

18. Four safety symbols are given below.



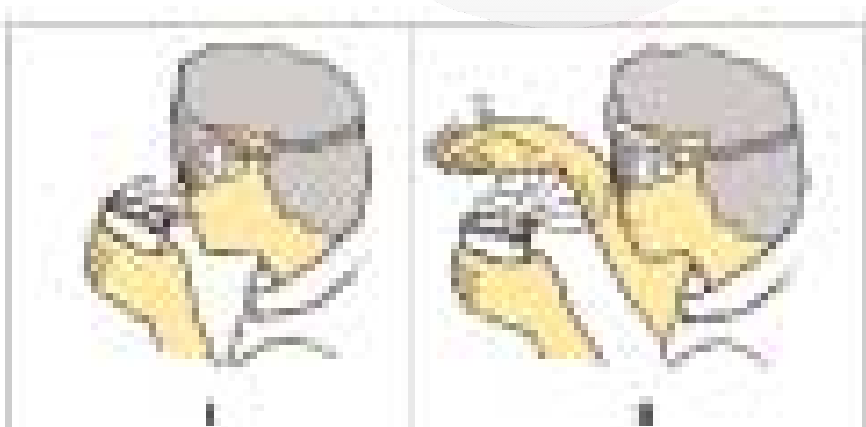
The most appropriate one for sulphur dioxide gas is

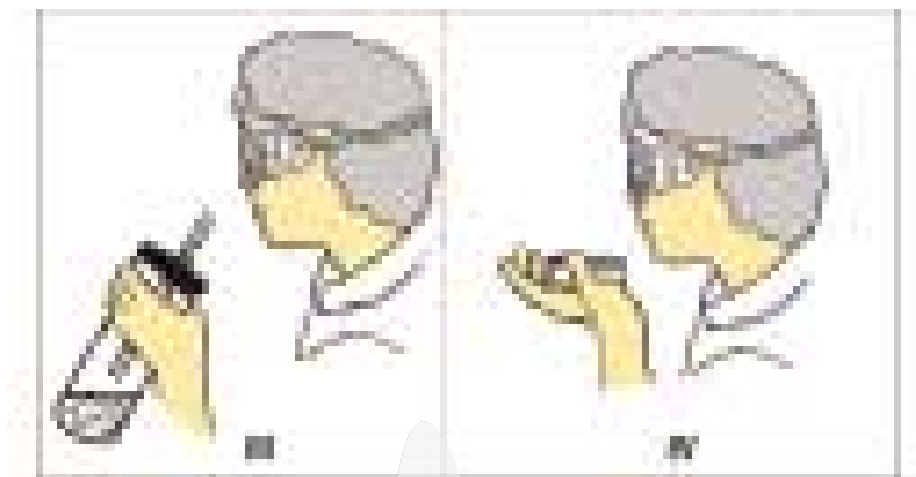
- (a) I.
- (b) II.
- (c) III.
- (d) IV.

19. An iron nail was suspended in copper sulphate solution and kept for a while. The solution

- (a) remained blue and a coating was formed on the nail.
- (b) turned green and a coating was found on the nail.
- (c) remained blue and no coating was formed on the nail.
- (d) turned green and no coating was formed on the nail.

20. The most appropriate method of testing the odour of a given liquid is





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

SECTION B

21. A student was given three samples containing ethanoic acid, sodium bicarbonate solution and water in test tubes I, II and III, respectively. On dipping a pH paper in them, he observed that the colour turned orange in I, blue in II and green in III. If arranged in increasing order of their pH, the sequence of these bottles would be

- (a) I, III, II.
- (b) I, II, III.
- (c) III, I, II.
- (d) II, III, I.

22. The following apparatus is available in the laboratory

Battery : adjustable from 0 to 6 V

Resistors : 3Ω and 6Ω

Ammeters : A1 of Range 0 to 5 A; Least Count 0.25 A

A2 of Range 0 to 3 A; Least Count 0.1 A

Voltmeters : V1 of Range 0 to 10 V; Least Count 0.5 V

V2 of Range 0 to 5 V; Least Count 0.1 V

For the experiment to find the equivalent resistance of the parallel combination of the two given resistors, the best choice would be

- (a) ammeter A1 and voltmeter V1.
- (b) ammeter A1 and voltmeter V2.
- (c) ammeter A2 and voltmeter V1.
- (d) ammeter A2 and voltmeter V2.

23. In an experiment to trace the path of a ray of light passing through a rectangular glass slab, four students tabulated their observations as given below.

A

S.No.	Angle of incidence degree	Angle of refraction degree	Angle of emergence degree
1	30	18	32
2	45	28	43
3	60	35	60

B

S.No.	Angle of incidence degree	Angle of refraction degree	Angle of emergence degree
1	30	15	38
2	45	20	53
3	60	28	67

C

S.No.	Angle of incidence degree	Angle of refraction degree	Angle of emergence degree
1	30	10	31
2	45	15	44
3	60	22	60

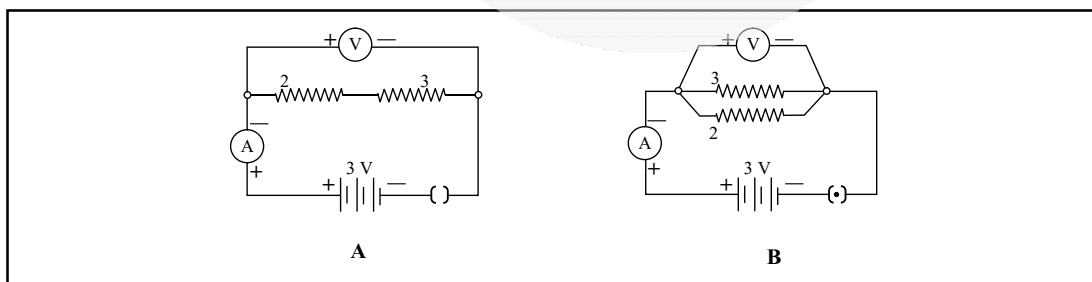
D

S.No.	Angle of incidence degree	Angle of refraction degree	Angle of emergence degree
1	30	28	28
2	45	40	40
3	60	56	56

The student most likely to have done the experiment properly is

- (a) A.
- (b) B.
- (c) C.
- (d) D.

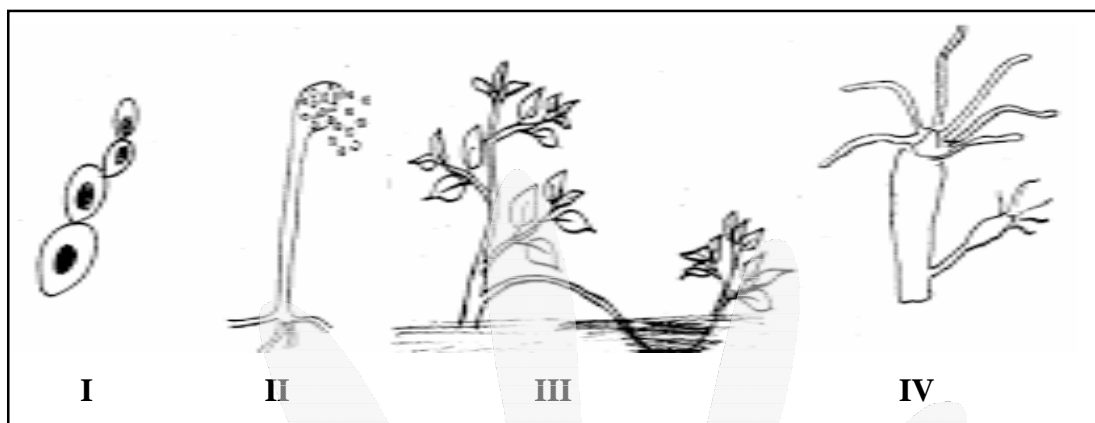
24. For the circuits A and B shown below, the voltmeter readings would be



- (a) 0.6 V in circuit A and 2.5 V in circuit B.
- (b) 0 V in both circuits.
- (c) 3 V in both circuits.
- (d) 0 V in circuit A and 3 V in circuit B.

25. Two of the following four figures that illustrate budding are

- (a) 1 and 2.
- (b) 1 and 3.
- (c) 1 and 4.
- (d) 2 and 4.



26. The correct procedure to prepare a temporary mount of a stained leaf epidermis is

A	B	C	D
Take a peel of a leaf; Stain it with safranin; Transfer the peel to the slide; Remove the excess stain; Put a cover slip on it.	Take a peel of a leaf; Wash it in water; Place it on the slide; Add a drop of glycerin on it; Put a cover slip gently.	Stain the leaf; Take a peel; Wash the peel in water; Place it on a slide; Put a cover slip on it.	Take a peel; Stain it with iodine; Transfer the peel to the slide; Remove excess stain with blotting paper; Put a cover slip on it.

- (a) A.
- (b) B.
- (c) C.
- (d) D.

27. While performing an experiment with raisins, a student recorded the following data.

Mass of water taken in the beaker = 50 g

Mass of raisins before soaking = 20 g

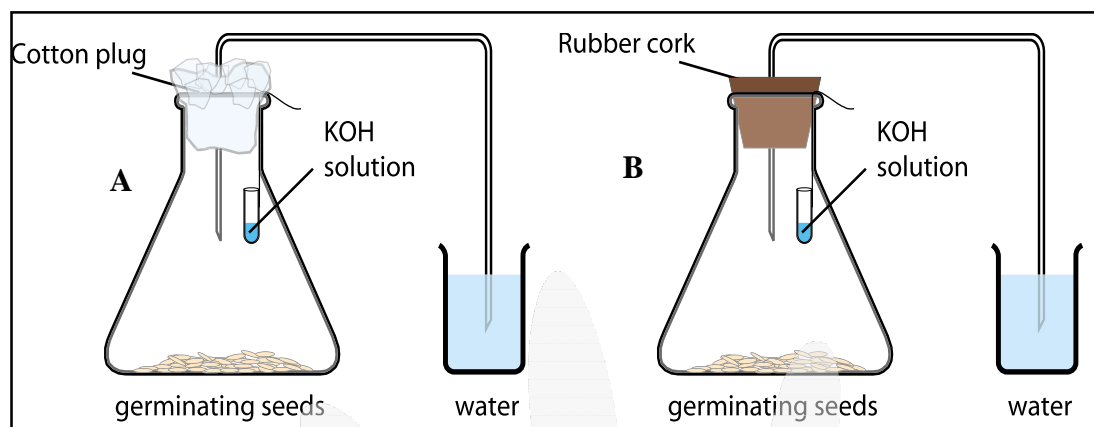
Mass of raisins after soaking = 30 g

Mass of water in the beaker left after experiment = 40 g

The % of water absorbed by the raisin is

- (a) 10 %.
- (b) 20 %.
- (c) 45 %.
- (d) 50 %.

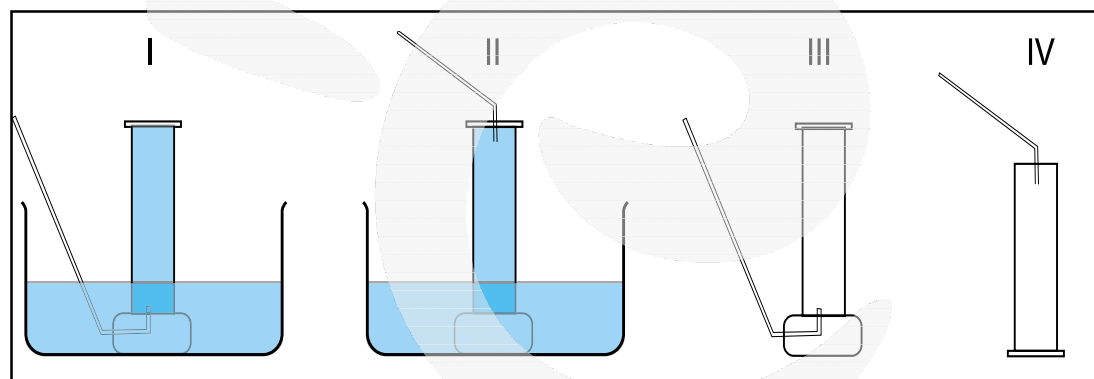
28. Using the same number of given germinating gram seeds, two students A and B set up the experiment separately. Student A used a cotton plug to hold the bent tube in the mouth of the flask. Student B used a rubber cork.



After 4 hours they noticed that

- water level increased in the bent tube only of A.
- water level increased in the bent tube only of B.
- the cotton plug was wet.
- the water in the beaker of B turned milky.

29. The proper experimental arrangement to collect sulphur dioxide is as shown in



- I.
- II.
- III.
- IV.

30. To show that zinc is more reactive than copper, the correct procedure is to

- prepare copper sulphate solution and dip zinc strip in it.
- prepare zinc sulphate solution and dip copper in it.
- heat zinc and copper strips.
- add dilute nitric acid on both the strips.

Question-wise Analysis and Scoring Key for Sample Paper III

Q.No	Correct choice	Explanation/ Remarks
1.	(c)	For testing pH, aqueous solutions are used.
2.	(d)	Since red litmus shows no colour change with acids, it is first to be changed to blue litmus
3.	(d)	Zinc reacts with sodium hydroxide on heating to produce hydrogen gas rapidly.
4.	(c)	The sharp inverted vertical image of the distant tree is formed by a concave mirror.
5.	(a)	All the three angles, shown, here have to be measured with respect to the normal drawn at the points of incidence/ emergence.
6.	(a)	The ammeter has to be put in series and the voltmeter in parallel, with the resistor, with both instruments connected with their polarities also correct.
7.	(a)	The screen is just a device to observe the (real) image formed by a convex lens. The image of a distant object continues to get formed at the focus of the convex lens even when no screen is being used to show its formation.
8.	(c)	We can connect only the voltmeter (a high resistance device) in parallel with the resistor R. An ammeter, (a very low resistance device) would reduce the overall resistance of the circuit to almost zero. This would damage not only the ammeter but also the battery eliminator.
9.	(b)	The voltmeter has to be put in parallel with the resistances being measured and not across the ammeter.
10.	(a)	We must keep the circuit closed for a relatively shorter time and open for a relatively longer time. This would ensure minimal changes in the values of resistances due to the heating effects of currents.
11.	(c)	Safranin is pinkish red in colour.
12.	(d)	The sequence illustrates binary fission in Amoeba.
13.	(d)	KOH absorbs CO ₂ released by the seeds.
14.	(b)	Sunlight is not available to the covered portion. Hence no starch. Remains white after starch test. The rest is stained.
15.	(b)	A is hypotonic to the sap of raisin. B is hypertonic. Hence endosmosis in A and exosmosis in B.
16.	(d)	Transverse fission in Paramecium.
17.	(b)	SO ₂ reduces acidified K ₂ Cr ₂ O ₇ and the most suitable acid used for acidification in dil H ₂ SO ₄
18.	(d)	SO ₂ is irritant/harmful
19.	(b)	Iron being more reactive displaces copper from copper sulphate.
20.	(b)	The gases should not be smelt directly or kept too close to nose.
21.	(a)	Ethanoic acid has the lowest pH and NaHCO ₃ has the highest pH whereas pH of water is in between the two

22.	(c)	The equivalent resistance of 3 and 6 , in parallel is 2 . The current in the circuit can, therefore, go only up to 3 A. We therefore choose instruments of correct range and a better least count.
23.	(a)	We must not only have the angle of emergence (nearly) equal to the angle of incidence but also have an idea of the magnitude of the angle of refraction (for a glass slab) for the three most often used values (30° , 45° , 60°) of the angle of incidence.
24.	(d)	Only circuit B, with a dot within the symbol of the plug key, is a closed circuit in which current is flowing and will show non-zero voltage. The voltmeter reading, for the set ups shown, would be(nearly) equal to the voltage of the battery.
25.	(c)	Yeast and Hydra reproduce by budding.
26.	(a)	Proper procedure to prepare a good stained temporary mount of leaf peel.
27.	(d)	Calculation using the formula.
28.	(b)	The conical flask should be closed with rubber cork to make it air tight. Otherwise partial vacuum will not be created.
29	(d)	SO ₂ is soluble in water and heavier than air.
30.	(a)	Zinc displaces copper from its salt solution.