

CREST Olympiads – A digital initiative to enhance practical knowledge

2. A tank is filled with water to a height of 10 cm. The apparent depth of the stone lying at the bottom of the tank is measured to be 7.5 cm:

- i. What is the refractive index of water?
- ii. If water is replaced by a liquid of refractive index 1.6 up to same height, what will be the new apparent depth of the stone?

a) i: 1.43, ii: 6.25 cm

b) i: 1.33, ii: 8.25 cm

c) i: 1.33, ii: 6.25 cm

d) i: 1.43, ii: 9.25 cm

3. Which of the following sequences is in the correct order to know the steps involved to test the presence of starch in a leaf?

P - Boil the leaf in alcohol in a water bath

Q - Add iodine solution

R - Wash the leaf in water

S - Boil the leaf in water

a) S, Q, R and P

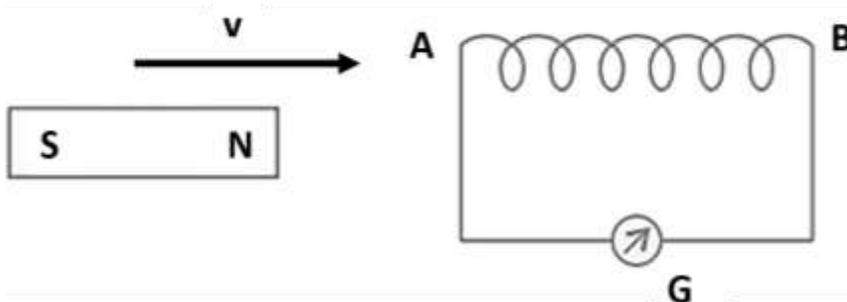
b) P, S, Q and R

c) Q, R, P and S

d) S, P, R and Q

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4. Carefully look at the figure below. A magnet is approaching a solenoid with a constant speed v .



What is the magnetic pole induced at the portion A and B of the solenoid and the direction of the induced current into the galvanometer (G)?

- a) Polarity at A: N, Polarity at B: S, Direction of the induced current: From the left
- b) Polarity at A: S, Polarity at B: N, Direction of the induced current: From the left
- c) Polarity at A: S, Polarity at B: N, Direction of the induced current: From the right
- d) Polarity at A: N, Polarity at B: S, Direction of the induced current: From the right

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5. In a lab experiment, four students Sam, Sarah, Rayan and James were given colourless liquids W (water), X (lemon juice), Y (mixture of water and lemon juice). The students tested the liquids with pH paper and reported the following sequences in colour change of pH paper:

Students	W	X	Y
Sam	Blue	Red	Green
Sarah	Red	Green	Green
Rayan	Orange	Green	Green
James	Green	Red	Red

Which of the following student reported the colour change of the pH paper correctly?

- a) Sam
- b) Sarah
- c) Rayan
- d) James

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6. 5 ml of an aqueous solution of barium chloride was taken in a test tube A and an equal amount of sodium sulphate solution was taken in another test tube B. In another beaker, solutions from test tube A and B were added together, and the colour of the precipitate formed was noted.

Which of the following observation is correct?

- a) Reaction: Double displacement reaction, Precipitate: BaSO_4 (white)
 - b) Reaction: Double displacement reaction, Precipitate: Sodium chloride (white)
 - c) Reaction: Displacement reaction, Precipitate: Sodium chloride (yellow)
 - d) Reaction: Displacement reaction, Precipitate: BaSO_4 (white)
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7. Consider the following experiment:

A small amount of sodium bicarbonate is taken in a test tube and a sufficient amount of acetic acid is added to it. In the reaction, a gas is evolved. The evolved gas is then passed through the lime water.

Which of the following is the correct observation of the above experiment?

- a) The evolved gas is hydrogen and it does not change the colour of lime water.
 - b) The evolved gas is carbon dioxide and it does not change the colour of lime water.
 - c) The evolved gas is hydrogen and it turns the lime water milky.
 - d) The evolved gas is carbon dioxide and it turns the lime water milky.
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8. Correct the given statements by replacing the underlined words and select the correct option:

(i) The leaves of the mimosa plant fold up quickly, when touched with a finger. This is an example of chemotropism.

(ii) Thigmotropism is a nastic movement of a plant part (like petals of flower) in response to light.

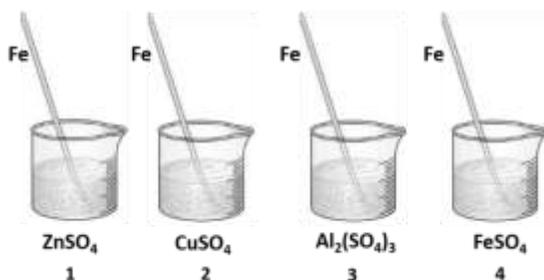
(iii) Cytokinins are the plant hormones which causes the bending of the root of the plant away from a source of light.

(iv) Most of the plant hormones promotes the plant growth. Ascorbic acid is a plant hormone which inhibits the plant growth.

- a) i-Thigmonasty, ii-Photonasty, iii-Auxins, iv-Abscisic acid
b) i-Chemotropism, ii-Photonasty, iii-Gibberellin, iv-Ethene
c) i-Hydrotropism, ii-Chemotropism, iii- Absciscic acid, iv-Ethene
d) i- Thigmonasty, ii-Chemotropism, iii- Auxins, iv-Ethene
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Achiever's Section

9. Four test tubes were taken and marked 1, 2, 3 and 4 respectively. 20 ml solution of ZnSO_4 , CuSO_4 , $\text{Al}_2(\text{SO}_4)_3$, FeSO_4 was taken in each beaker and the initial colour of these solutions was noted. Fe rod was inserted in each solution and left undisturbed for 2 hours, the colour of each solution was again noted.



Which of the following correctly shows the change of colour of each solution?

- a)

	1	2	3	4
Change in colour	Colourless	Light blue	No change	Colourless
- b)

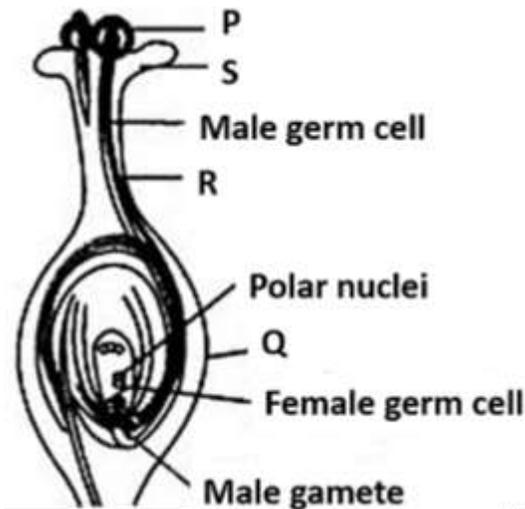
	1	2	3	4
Change in colour	No change	Green	No change	No change
- c)

	1	2	3	4
Change in colour	Colourless	No change	No change	Colourless
- d)

	1	2	3	4
Change in colour	Colourless	Light green	No change	Colourless

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10. Refer to the given figure and select the incorrect statements:



- (i) The part labelled 'P' contains the female reproductive cell of plants.
- (ii) The part labelled 'Q' contains ovules which develops into seed upon fertilization.
- (iii) The part labelled 'R' is the tube through which cells produced by pollen grain reaches the ovary.
- (iv) The part labelled 'S' is the part of the pistil where fertilization takes place.

Which of the above statements is/are incorrect?

- a) Only (i)
- b) Only (iii)
- b) Both (i) and (iv)
- d) (ii), (iii) and (iv)

Answers

1.(a), 2. (c), 3. (d), 4. (a), 5. (d), 6. (a), 7. (d), 8. (a), 9 (b), 10. (b)