SAMPLE PAPER

CREST Science Olympiad (CSO)

CLASS 10

Syllabus for CSO is available at https://www.crestolympiads.com/cso-syllabus

## Pattern And Marking Scheme

| Class | Topic/Section | No. of Questions | Marks per Questions | Total Marks |
|---|---|---|---|---|
| | Practical Science | 25 | 1 | 25 |
| 1st to 4th | Achiever's Section | 10 | 2 | 20 |
| | **Grand Total** | **35** | - | **45** |
| | Practical Science | 40 | 1 | 40 |
| 5th to 10th | Achiever's Section | 10 | 2 | 20 |
| | **Grand Total** | **50** | - | **60** |

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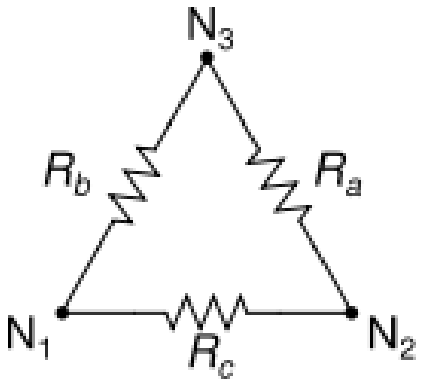
1. Three resistors $R_a$, $R_b$ and $R_c$ are connected to form the sides of a triangle $N_1N_2N_3$. The resistance of side $N_1N_3$ is 80 Ω, side $N_1N_2$ is 50 Ω and that of side $N_2N_3$ is 70 Ω.




Find the effective resistance between points $N_1$ and $N_3$.

a) 48 Ω
b) 40 Ω
c) 58 Ω
d) 60 Ω

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**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

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**3.** Which of the following sequences in is 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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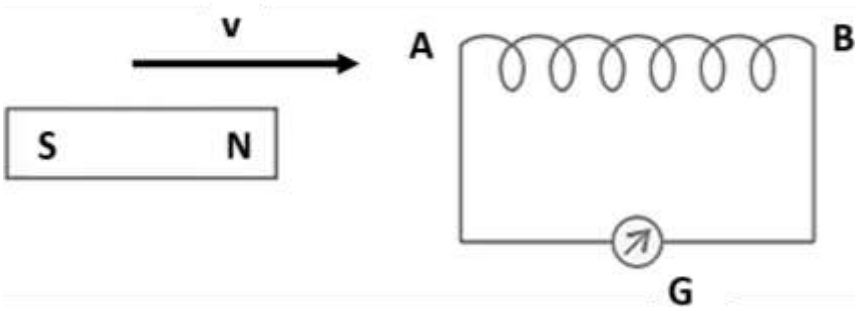
**4.** Carefully look at the figure below. A magnet is approaching a solenoid with a constant speed v.




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

**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. This evolved gas is then passed through the lime water.

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

a) The gas evolved is hydrogen and it does not change the colour of lime water.
b) The gas evolved is carbon dioxide and it does not change the colour of lime water.
c) The gas evolved is hydrogen and it turns the lime water milky.
d) The gas evolved 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- Abscisic acid, iv-Ethene
d) i- Thigmonasty, ii-Chemotropism, iii- Auxins, iv-Ethene

# Achiever's Section

**9.** Four test tubes were taken and marked 1, 2, 3 and 4 respectively. 20 ml solution of $ZnSO_4$, $CuSO_4$, $Al_2(SO_4)_3$, $FeSO_4$ 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 |

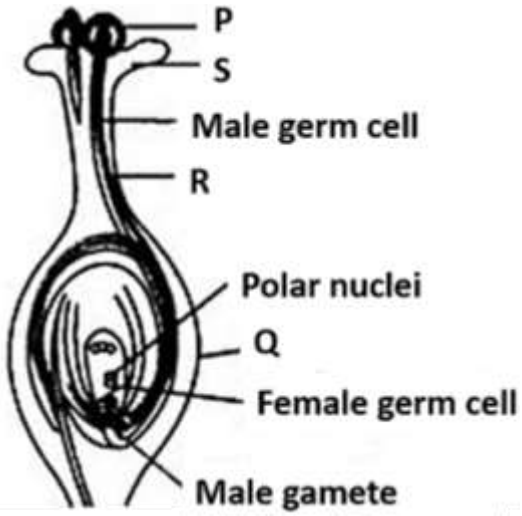
c)

| | 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 |

**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) Both (i) and (iv)
b) Only (iii)
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)