

SAMPLE PAPER 1

Class 10 - Science

Time Allowed: 3 hours

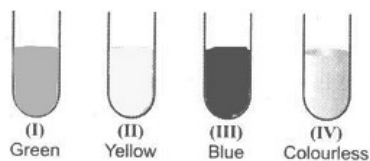
Maximum Marks: 80

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective-type questions carrying 1 mark each.
4. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
5. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

1. Four test tubes containing solutions (I), (II), (III) and (IV) are shown below along with their colours. Zinc sulphate is contained in [1]

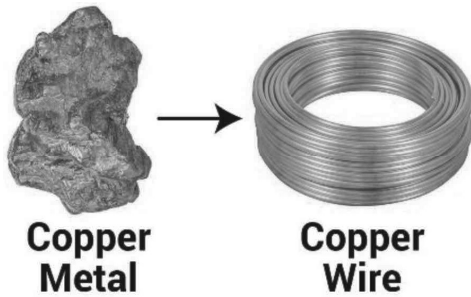


- a) II b) IV
- c) I d) III
2. A white precipitate formed by the reaction of barium chloride with sodium sulphate solution is due to [1]
- a) BaSO_3 b) BaSO_4
- c) BaO d) BaS
3. The raw materials that are required for the manufacturing of washing soda by the Solvay process are: [1]
- a) NH_4OH , CaCO_3 , NaCl b) NaCl , CaCO_3 , NH_3
- c) NaCl , NH_4OH , CaO d) NH_3 , CaCl_2 , CaCO_3
4. Which of the following gas is used in welding and cutting metals? [1]
- a) All of these b) Ethyne

c) Ethane

d) Ethene

5. The property of metal by which it can be drawn into wires is called: [1]



- a) Ductility
b) Malleability
c) Conductivity
d) Sonorous
6. Galvanisation process involves elements of zinc and iron. Which of the two metals is sacrificing its life to save the life of the other? [1]
- a) None of these
b) Both sacrifice each other's life
c) Zn
d) Fe
7. Ethane - with the molecular formula C_2H_6 has [1]
- a) 9 covalent bonds
b) 8 covalent bonds
c) 7 covalent bonds
d) 6 covalent bonds
8. In which of the following vertebrate group/groups, the heart does not pump oxygenated blood to different parts of the body? [1]
- a) Amphibians and reptiles
b) Amphibians only
c) Pisces and amphibians
d) Pisces only
9. Which of the following is not a character selected by Mendel? [1]
- A. Flower shape
B. Pod colour
C. Pod position
D. Branch length
- a) A and C
b) A, B and D
c) A and D
d) B and C
10. Characters that are transmitted from parents to offspring during reproduction show - [1]
- a) only variations with parents
b) Both similarities and variations with parents
c) neither similarities nor variations
d) only similarities with parents
11. Select the group which shares maximum number of common characters- [1]
- a) two genera of a family
b) two individuals of a species
c) two species of a genus
d) two genera of two families
12. Which of the following enzyme helps in breaking sucrose into glucose and fructose? [1]
- a) Invertase
b) Diastase

22. How does binary fission differ from multiple fission? [2]
23. What is the role of respiratory pigment in respiration? Give one example. [2]

OR

Distinguish between breathing and respiration.

24. To construct a ray diagram we use two rays which are so chosen that it is easy to know their directions after reflection from the mirror. List two such rays and state the path of these rays after reflection in case of concave mirrors. Use these two rays and draw ray diagram to locate the image of an object placed between pole and focus of a concave mirror. [2]
25. Our food grains, such as wheat and rice, the vegetables and fruits and even meat are found to contain varying amounts of pesticide residues, State the reason to explain how and why it happens. [2]

OR

What will happen if we kill all the organisms of one trophic level?

26. Far point of a myopic eye is 20 cm. What type of lens should be wear to see a picture on T.V. placed 2.5 m away from him ? [2]

Section C

27. There are 3 unknown metals - A, B and C. C displaces B from its oxide while with oxide of A, there is no reaction. Give the reactivity order of A, B and C. [3]
28. i. What is meant by the reactivity series of metals? Arrange the following metals in an increasing order of their reactivities towards water : Zinc, iron, magnesium, Sodium [3]
ii. Hydrogen is not a metal but still it has been assigned a place in the reactivity series of metals. Why?
iii. Name one metal more reactive and another less reactive than hydrogen.
iv. Name one metal which displaces copper from copper sulphate solution and one which does not.
v. Name one metal which displaces silver from silver nitrate solution and one which does not.

OR

You are given a hammer, a battery, a bulb, wires and a switch.

- i. How could you use them to distinguish between samples of metals and non-metals.
ii. Assess the usefulness of these tests in distinguishing between metals and non-metals.
29. How do carbohydrates, proteins and fats get digested in human beings? [3]
30. Give the respective scientific terms used for studying [3]
i. The mechanism by which variations are created and inherited.
ii. the development of new types of organisms from the existing ones.
31. a. Define focal length of a divergent lens. [3]
b. A divergent lens of focal length 30 cm forms the image of an object of size 6 cm on the same side as the object at a distance of 15 cm from its optical centre. Use lens formula to determine the distance of the object from the lens and the size of the image formed.
c. Draw a ray diagram to show the formation of image in the above situation.
32. Show how you would connect three resistors, each of resistance 6Ω , so that the combination has a resistance of [3]
a. 9Ω
b. 4Ω
33. Calculate the total cost of running the following electrical devices in the month of September, if the rate of 1 unit of electricity is Rs. 6.00. [3]

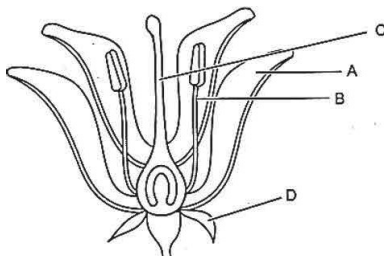
- i. Electric heater of 1000 W for 5 hours daily.
- ii. Electric refrigerator of 400 W for 10 hours daily.

Section D

34. a. What is meant by a functional group? Explain with an example. [5]
- b. Write three common functional groups present in organic compounds. Give their symbols/formulae.
- c. Name the functional groups present in the following compounds:
- i. CH_3COOH ,
 - ii. $\text{CH}_3\text{CH}_2\text{CHO}$,
 - iii. $\text{C}_2\text{H}_5\text{OH}$,
 - iv. $\text{CH}_3\text{COCH}_2\text{CH}_3$.
- d. Name the functional group which always occurs in the middle of a carbon chain.
- e. Draw the structures for the following compounds:
- i. Ethanal
 - ii. Propanal
 - iii. Butanal
 - iv. Pentanal

OR

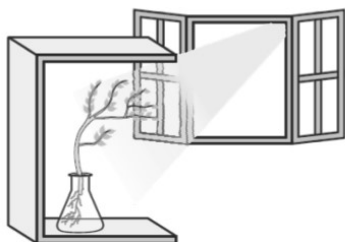
- i. Give a chemical test to distinguish between saturated and unsaturated hydrocarbon.
 - ii. Name the products formed when ethane burns in air. Write the balanced chemical equation for the reaction showing the types of energies liberated.
 - iii. Why is reaction between methane and chlorine in the presence of sunlight considered a substitution reaction?
35. Study the below diagram and answer the following: [5]



- i. Label the parts A, B, C and D.
- ii. Which parts represent the male and female reproductive parts respectively.
- iii. What is the function of the parts labelled A and D?
- iv. What do you mean by pollination and explain the different types of pollination?

OR

The image shows phototropism in the plant stem.



Using the given image, answer the following questions:

- i. Which plant hormone is responsible for the bending of the stem towards the light?
 - ii. Where is this hormone present in the plant?
 - iii. What makes the stem bend towards the light?
 - iv. Why such movement of plant stem is called positive tropism?
 - v. Which part of the plant shows negative phototropism?
36. i. One half of a convex lens of focal length 10 cm is covered with a black paper. Can such a lens produce an image of a complete object placed at a distance of 30 cm from the lens? Draw a ray diagram to justify your answer. [5]
- ii. A 4 cm tall object is placed perpendicular to principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 15 cm. Find the nature, position and the size of the image.

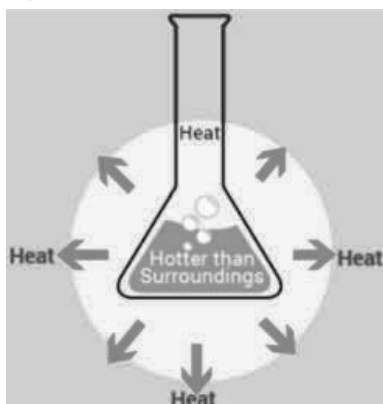
OR

An object 1 m tall is placed on the principal axis of a convex lens and its 40 cm tall image is formed on the screen placed at a distance of 70 cm from the object. What is the focal length of the lens?

Section E

37. **Read the text carefully and answer the questions:** [4]

The dissolving of an acid or a base in water is a highly exothermic reaction. Care must be taken while mixing concentrated nitric acid or sulphuric acid with water. The acid must always be added slowly to water with constant stirring. If water is added to a concentrated acid, the heat generated may cause the mixture to splash out and cause burns. The glass container may also break due to excessive local heating. Look out for the warning sign on the can of concentrated sulphuric acid and on the bottle of sodium hydroxide pellets.



- (i) What is the exothermic reaction?
- (ii) Write an example of an exothermic reaction.

OR

How will you obtain sulphuric acid from an acidic oxide?

38. **Read the text carefully and answer the questions:** [4]

Animals have a nervous system for controlling and coordinating the activities of the body. But plants have neither a nervous system nor muscles. So, how do they respond to stimuli? When we touch the leaves of a chui-mui (the 'sensitive' or 'touch-me-not' plant of the Mimosa family), they begin to fold up and droop. When a seed germinates, the root goes down, the stem comes up into the air. What happens? Firstly, the leaves of the sensitive plant move very quickly in response to touch.

There is no growth involved in this movement. On the other hand, the directional movement of a seedling is

caused by growth. If it is prevented from growing, it will not show any movement.



- (i) Write the types of movement.
- (ii) Give an example of a plant hormone that promotes growth.
- (iii) What is the function of the nervous system?

OR

How is the movement of leaves of the sensitive plant different from the movement of a shoot towards light ?

39. **Read the text carefully and answer the questions:** **[4]**

A student fixes a sheet of white paper on a drawing board using some adhesive materials. She places a bar magnet in the centre of it and sprinkles some iron filings uniformly around the bar magnet using a salt sprinkler. On tapping the board gently, she observes that the iron filings have arranged themselves in a particular pattern.

- (i) What makes iron filings arrange in a definite pattern?
- (ii) Draw a diagram to show this pattern of iron filings.
- (iii) How is the direction of magnetic field at a point determined using the field lines? Why do two magnetic field lines not cross each other?

OR

How are the magnetic field lines of a bar magnet drawn using a small compass needle? Draw one magnetic field line each on both sides of the magnet.

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