

अभ्यास

CLASS X – SCIENCE

SAMPLE QUESTIONS PAPER (2024-25)

Max. Marks: 80

Time Allowed: 3 hours

General Instructions:

1. All questions would be compulsory. However, an internal choice of approximately 33% would be provided. 50% marks are to be allotted to competency-based questions.
2. Section A would have 16 simple/complex MCQs and 04 Assertion-Reasoning type questions carrying 1 mark each.
3. Section B would have 6 Very Short Answer (VSA) type questions carrying 02 marks each.
4. Section C would have 7 Short Answer (SA) type questions carrying 03 marks each.
5. Section D would have 3 Long Answer (LA) type questions carrying 05 marks each.
6. Section E would have 3 source based/case based/passage based/integrated units of assessment (04 marks each) with sub-parts of the values of 1/2/3 marks.

Section-A

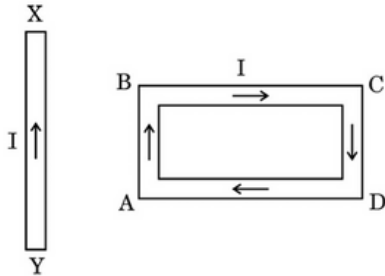
Multiple Choice Questions

1. Four solutions, namely glucose, alcohol, hydrochloric acid and sulphuric acid filled in four separate beakers are connected one by one in an electric circuit with a bulb. The solutions in which the bulb will glow when current is passed are : 1
(a) Glucose and alcohol
(b) Alcohol and hydrochloric acid
(c) Glucose and sulphuric acid
(d) Hydrochloric acid and sulphuric acid
2. The metals which are found in both free state as well as combined state are: 1
(a) Gold and platinum
(b) Platinum and silver
(c) Copper and silver
(d) Gold and silver
3. $\text{Zn} + 2\text{CH}_3\text{COOH} \longrightarrow (\text{CH}_3\text{COO})_2\text{Zn} + \text{H}_2$ 1
The above reaction is a:
(a) Decomposition reaction
(b) Displacement reaction
(c) Double displacement reaction
(d) Combination reaction
4. The number of single and double bonds present in a molecule of benzene (C_6H_6) respectively, are: 1
(a) 6 and 6
(b) 9 and 3
(c) 3 and 9
(d) 3 and 3
5. A plant growth inhibitor hormone which causes wilting of leaves is called: 1
(a) Auxin
(b) Cytokinin
(c) Absciscic acid
(d) Gibberellin

6. When a beam of white light passes through a region having very fine dust particles, the colour of light mainly scattered in that region is :

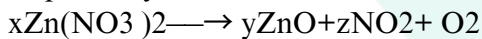
- (a) Red
- (b) Orange
- (c) Blue
- (d) Yellow

7. A rectangular loop ABCD carrying a current I is situated near a straight conductor XY, such that the conductor is parallel to the side AB of the loop and is in the plane of the loop. If a steady current I is established in the conductor as shown, the conductor XY will



- (a) remain stationary
- (b) move towards the side AB of the loop
- (c) move away from the side AB of the loop.
- (d) rotate about its axis.

8. To balance the following chemical equation, the values of the coefficients x, y, and z must be respectively:



- (a) 4, 2, 2
- (b) 4, 4, 2
- (c) 2, 2, 4
- (d) 2, 4, 2

9. The correct sequence of events when someone's hand touches a hot object unconsciously:

- (a) Receptors in skin → Motor neuron → Relay neuron → Sensory neuron → Effector muscle in arm
- (b) Receptors in skin → Relay neuron → Sensory neuron → Motor neuron → Effector muscle in arm
- (c) Receptors in skin → Sensory neuron → Relay neuron → Motor neuron → Effector muscle in arm
- (d) Receptors in skin → Sensory neuron → Effector muscle in arm → Motor neuron → Relay neuron

10. The incorrect statement about placenta is:

- (a) It is a disc embedded in the uterine wall.
- (b) It contains villi on the embryo's side of the tissue.
- (c) It has a very small surface area for glucose and oxygen to pass from mother to the embryo.
- (d) The embryo gets nutrition from the mother's blood through it.

11. How will the image formed by a convex lens be affected, if the upper half of the lens is wrapped with a black paper?

- (a) The size of the image formed will be one-half of the size of the image due to complete lens.
- (b) The image of upper half of the object will not be formed.
- (c) The brightness of the image will reduce.
- (d) The lower half of the inverted image will be formed.

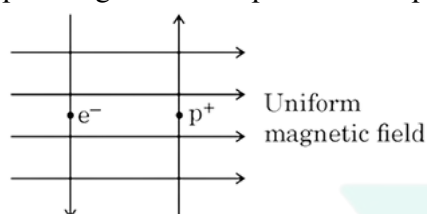
12. Which of the following is a redox reaction, but not a combination reaction?

- (a) $\text{C} + \text{O}_2 \rightarrow \text{CO}_2$
- (b) $2\text{H} + \text{O}_2\text{H} \rightarrow 2\text{H}_2\text{O}$
- (c) $\text{Mg} + \text{O}_2 \rightarrow \text{MgO}$
- (d) $\text{Fe}_2\text{O} + 3\text{CO} \rightarrow 2\text{Fe} + 3\text{CO}$

13. An aqueous solution of a salt turns blue litmus to red. The salt could be the one obtained by the reaction of : 1
- (a) HNO_3 and NaOH
 - (b) H_2SO_4 and KOH
 - (c) CH_3COOH and NaOH
 - (d) HCl and NH_4OH

14. The process in which transport of soluble products of photosynthesis takes place in plants is known as: 1
- (a) Transpiration
 - (b) Evaporation
 - (c) Conduction
 - (d) Translocation

15. A uniform magnetic field exists in the plane of paper as shown in the diagram. In this field, an electron (e^-) and a positron (p^+) enter as shown. The electron and positron experience forces : 1
- (a) both pointing into the plane of the paper.
 - (b) both pointing out of the plane of the paper.
 - (c) pointing into the plane of the paper and out of the plane of the paper respectively.
 - (d) pointing out of the plane of the paper and into the plane of the paper respectively.



16. Offsprings formed by asexual method of reproduction have greater similarity among themselves because____. 1
- (a) Asexual reproduction involves two parent
 - (b) Asexual reproduction does not involve gametes
 - (c) Asexual reproduction occurs before sexual reproduction
 - (d) Asexual reproduction occurs before sexual reproduction

Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true, and R is not the correct explanation of A. C. A is true but R is false. D. A is false but R is true

17. **Assertion (A):** On adding dil. HCl to a test tube containing a substance 'X', a colourless gas is produced which gives a pop sound when a burning match stick is brought near it. 1
Reason (R): In this reaction metal 'X' is displaced by Hydrogen.
18. **Assertion (A):** Generally, the number of chromosomes in a cell and in a germ cell is not the same in species. 1
Reason (R): When two germ cells combine, they restore the normal number of chromosomes in a species
19. **Assertion (A):** A convex mirror always forms an image behind it and the image formed is virtual. 1
Reason (R): According to the sign convention, the focal length of a convex mirror is positive.
20. **Assertion (A):** If the lions are removed from a food chain it will not affect the food chain, however if the plants are removed from a food chain it will disturb the ecosystem. 1
Reason (R): Plants are producers who can make food using sunlight, while lions are consumers.

Section-B

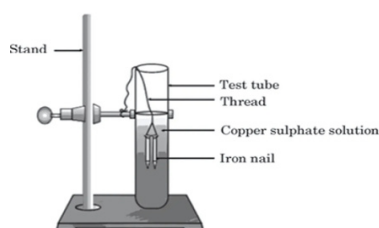
Very Short Answers Questions

21. (a) Sometimes while running, the athletes suffer from muscle cramps. Why ? How is the respiration in this case different from aerobic respiration ? 2
- “OR”**
- (b) Write the other name given to lymph. State its two functions.
22. Distinguish between a saturated and an unsaturated hydrocarbon by flame test. List the products of combustion reaction of a saturated hydrocarbon. 2
23. (a) How is the movement of leaves of a sensitive plant different from the downward movement of the roots? 2
- “OR”**
- (b) There is a hormone which regulates carbohydrate, protein, and fat metabolism in our body. Name the hormone and the gland which secretes it. Why is it important for us to have iodised salt in our diet?
24. An object is placed at a distance of 10 cm from a convex mirror of focal length 15 cm. Find the position of the image formed by the mirror. 2
25. The melting and boiling points of carbon compounds are generally low and they are largely non-conductors of electricity. State two conclusions based on these two properties. 2
26. An electric source can supply a charge of 750 coulomb. If the current drawn by a device is 15 mA, find the time in which the electric source will be discharged completely. 2

Section-C

Short Answers Questions

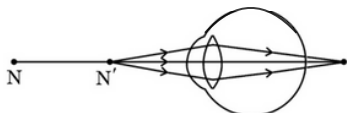
27. Study the experimental set-up shown in the diagram and write chemical equation for the chemical reaction involved. Name and define the type of reaction. List two other metals which can be used in place of iron to show the same type of reaction with copper sulphate solution 3



28. Differentiate between food chain and food web. In a food chain consisting of deer, grass and tiger, if the population of deer decreases, what will happen to the population of organisms belonging to the first and third trophic levels ? 3
29. (a) (b) Explain with the help of a labelled diagram, the process of reproduction in Hydra by budding. Name the cells used for reproduction in this process. 3
- “OR”**
- List two roles of each of the following in human reproductive system:
- (i) Seminal vesicles and (ii) Prostate gland (iii) Oviduct Testis
30. Why is the conversion of ethanol to ethanoic acid an oxidation reaction ? Name the oxidising agent used in this conversion. Write chemical equation for this oxidation reaction. How is this reaction different from the reaction in which ethanol burns in the presence of oxygen ? 3

31. (a) Study the diagram given below and answer the questions that follow :

3



- Name the defect of vision depicted in this diagram stating the part of the eye responsible for this condition.
- List two causes of this defect.
- Name the type of lens used to correct this defect and state its role in this case.

“OR”

What is dispersion of white light ? State its cause. Draw a diagram to show dispersion of a beam of white light by a glass prism.

- Taking the example of any two animal hormones along with their gland of secretion, explain how these hormones help (i) in growth and development and (ii) regulate metabolism, in the body. 3
- “Earth wire is a safety in domestic electric circuits” justify this statement explaining its role in case of accidental leakage of electric appliances. 3

Section-D

Long Answers Questions

- (a) Explain chlor-alkali process and write balanced chemical equations for the reactions that occur. Name the gases obtained at the anode and cathode respectively. Mention two uses each of the two gases obtained in the above process. 5

“OR”

(b) Common salt is a very important raw material as many compounds of industrial use can be prepared from it. Explain, giving chemical equations, the method of preparation of washing soda from sodium chloride. List four industrial/domestic uses of washing soda.

- (a) (i) Define a reflex arc. Why have reflex arcs evolved in animals ? Trace the sequence of events which occur, when you suddenly touch a hot object. 5
(ii) Name the part of nervous system which helps in communication between the central nervous system and other parts of the body. What are the two components of this system ?

“OR”

- (i) Leaves of chhui-mui plant begin to fold up and droop in response to a stimulus. Name the stimulus and write the cause for such a rapid movement. Is there any growth involved in the movement ?
(ii) Define geotropism in plants. What is meant by positive and negative geotropism ? Give one example of each type.

- (a) The variation of image distance (v) with object distance (u) for a convex lens is given in the following observation table. Analyse it and answer the questions that follow : 5

S. No.	Object distance (u) cm	Image distance (v) cm
1	- 150	+ 30
2	- 75	+ 37.5
3	- 50	+ 50
4	- 37.5	+ 75
5	- 30	+ 150
6	- 15	+ 37.5

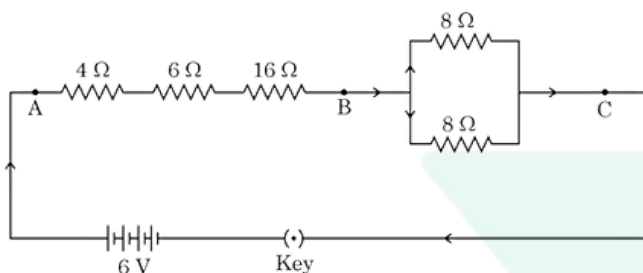
- Without calculation, find the focal length of the convex lens. Justify your answer.
- Which observation is not correct ? Why ? Draw ray diagram to find the position of the image formed for this position of the object.
- Find the approximate value of magnification for $u = 30$ cm.

Section-E

Case-based / data-based Questions

37. A highly polished surface such as a mirror reflects most of the light falling on it. In our daily life we use two types of mirrors plane and spherical. The reflecting surface of a spherical mirrors may be curved inwards or outwards. In concave mirrors, reflection takes place from the inner surface, while in convex mirrors reflection takes place from the outer surface. 4
- (a) Define the principal axis of a concave mirror.
- (b) A ray of light is incident on a concave mirror, parallel to its principal axis. If this ray after reflection from the mirror passes through the principal axis from a point at a distance of 10 cm from the pole of the mirror, find the radius of curvature of the mirror.
- (b) (i) An object is placed at a distance of 10 cm from the pole of a convex mirror of focal length 15 cm. Find the position of the image

38. Study the following circuit : 4



On the basis of this circuit, answer the following questions :

- (a) Find the value of total resistance between the points A and B.
- (b) Find the resistance between the points B and C.
- (c) Calculate the current drawn from the battery, when the key is closed.
39. Pollination is an important process in sexual reproduction of plants. It is an essential process that facilitates fertilisation in plants. Pollinating agents can be wind, water, insects and birds. Several changes take place in the flower after the fertilization has taken place. 4
- (a) Write the main difference between self-pollination and cross-pollination.
- (b) Name the part of the flower which attracts insects for pollination. What happens to this part after fertilisation ?
- (c) (i) Define fertilisation. What is the fate of ovules and the ovary in a flower after fertilisation ?
- “OR”**
- (ii) In a germinating seed, which parts are known as future shoot and future root ? Mention the function of cotyledon.