CBSE
Class X Science
Sample Paper – 9
Term II

Total time: 3 hrs **Total marks: 90**

General instructions:

1. *The question paper comprises of **two sections, A and B**. You are to attempt both the sections.*
2. *All the questions of **Section-A** and **Section-B** are to be attempted separately.*
3. *Question numbers **1** to **3** in **Section - A** are **one mark** questions. These are to be answered in one word or one sentence.*
4. *Question numbers **4** to **6** in **section - A** are **two marks** questions, to be answered in about **30 words each**.*
5. *Question number **7** to **18** in **section-A** are **three marks** questions, to be answered in about **50 words**.*
6. *Question number **19** to **24** in **section-A** are **five marks** questions, to be answered in about **70 words**.*
7. *Question numbers **25** to **33** in **section-B** are multiple choice questions based on practical skills. Each question is a one mark question. You are to select one most appropriate response out of the four provided to you.*
8. *Question numbers **34 to 36** in Section B are questions based on practical skills and are two marks questions.*

SECTION A

1. In which of the given media, light moves the fastest? [1]

Medium	Refractive index
Water	1.33
Ice	1.31
Alcohol	1.36

2. Explain why the number of elements in the third period is 8. [1]

3. The organisms formed by asexual reproduction are considered as clones. Why? [1]

4. Pesticides are useful to farmers and yet, are considered as pollutants. Give sreasons. [2]

5. Having two eyes enables us to judge distance more accurately. Why? [2]

6. Write the names and molecular formulas of any two organic compounds having functional group suffixed with 'oic acid'. With the help of a balanced equation, explain what happens when any one of them reacts with sodium hydroxide. [2]

7. Briefly describe who all constitute the category stakeholders and why all of them are dependent on trees? [3]

8. How do the concave metal dishes work in dish antennas of television to receive TV signals? [3]

9. A convex lens has a focal length of 25 cm. Calculate the distance of the object from the lens if the image is to be formed on the opposite side of the lens at a distance of 75 cm from the lens. What will be the nature of the image? [3]

10. [3]

(a) Why do astronauts who go to outer space find the sky to be dark and black instead of blue?

(b) Why clouds look white?

11. [3]

(a) How does an eye adjust itself to deal with light of varying intensity

(b) How is cataract caused? How it can be cured?

12. [3]

(a) How does the electronic configuration of an atom relate to its position in the modern periodic table?

(b) Two elements with symbol X (atomic no. 11) and Y (atomic no. 13) are placed in the III period of the modern periodic table. Element 'Y' is smaller than 'X' in terms of atomic size. Is the statement true, justify?

13. Starting from the hydrocarbon butane, write the structures and IUPAC names of: [3]

(a) chloroderivative

(b) ketone

(c) carboxylic acid

14. Properties of some elements are given below. Identify in each case, the element in the periodic table to which it belongs. [3]

(a) A soft metal stored under kerosene.
(b) An element with variable valency stored under water.
(c) An element which is tetravalent and forms the basis of organic chemistry.
(d) An element which is an inert gas with atomic number 2.
(e) A metal which burns with brilliant light when ignited.
(f) An element which is yellow solid at room temperature that shows catenation and allotropy.

15. Describe the concept of trophic levels briefly. [3]

16. Describe briefly, three ways in which individuals with a particular trait may increase in a population. [3]

17. How is sex determined in human beings? [3]

18. What is meant by the terms: [3]

(a) Haploid and
(b) Diploid?
(c) How are chromosomes, DNA and genes related to each other?

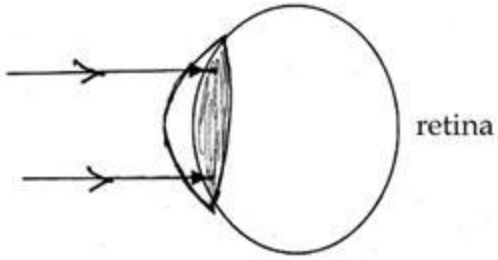
19. What is meant by tissue culture? How is this technique performed? In which area, does this technique find its application? [5]

20. [5]

(a) An object is kept at a given distance from a concave lens having a focal length of magnitude x. Draw ray diagrams showing the formation of image in the two cases.
   i. 2x
   ii. (3/2) x
(b) What is/are the point(s) of similarity/dissimilarity between the images formed in the two cases?

21. [5]

(a) Copy the following diagram on your answer sheet showing the formation of the image, assuming that the given eye is a myopic eye.



(b) State two causes of this defect.

(c) Name the type of lens that would correct this defect.

(d) Draw a ray diagram to illustrate how this lens helps to correct myopia.

22. Mendeleev predicted the existence of certain elements not known at that time and named two of them as eka-aluminium and eka-silicon. Swati has been given an assignment in the class on Mendeleev's periodic table. She has to answer the following questions in the assignment: [5]

(a) Name the element which has taken the place of

i. eka-aluminium

ii. eka-silicon

(b) Mention the period/periods of these elements in the modern periodic table.

(c) Write the group/groups of these elements in the modern periodic table.

(d) Classify these elements as metals, non-metals or metalloids.

(e) How has the classification of elements according to modern periodic table helped in making the study of chemistry easy?

23. [5]

(a) How does reproduction occur in:

i. Malarial parasite

ii. Leishmania?

(b) What is meant by multiple fission? Explain the process.

24. Mention secondary sexual characteristics in human males and females. [5]

SECTION B

25. A student has to perform an experiment on tracing the path of a ray of light passing through a rectangular glass slab for three different angles of incidence. Four of his friends suggest the following options to him: [1]

A. Draw the incident rays corresponding to 20^o, 50^o and 70^o as the angles of incidence and fix the two pins on the incident rays just 2 cm apart
B. Draw the incident rays corresponding to 20^o, 45^o and 70^o as the angles of incidence and fix the two pins on the incident rays just 8 cm apart
C. Draw the incident rays corresponding to 30^o, 45^o and 60^o as the angles of incidence and fix the two pins on the incident rays nearly 8 cm apart
D. Draw the incident rays corresponding to 30^o, 45^o and 60^o as the angles of incidence and fix the two pins on the incident rays nearly 2 cm apart

The best option that he should follow is option

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

26. What will be the position of point source to get a parallel beam of light when light from a point source is incident on a convex lens? [1]

(a) At $2F_1$
(b) At F_1
(c) Between $2F_1$ and F_1
(d) Between F_1 and optical centre

27. A student takes four test tubes marked a, b, c and d containing NaCl, Na2CO3, NaHCO3 and NaOH respectively. He adds acetic acid to the test tubes one by one and every time he immediately brings a lighted matchstick near the mouth of the test tube, he observes that the matchstick extinguishes in case of [1]

(a) 'a' and 'b'
(b) 'b' and 'c'
(c) 'c' and 'd'
(d) 'd' and 'a'

28. Which of the following will give a pleasant smell of ester when heated with ethyl alcohol and a small quantity of sulphuric acid [1]

(a) CH_3OH
(b) CH_3CHO
(c) CH_3COOH
(d) CH_3COCH_3

29. Which gas is released when ethyl alcohol reacts with sodium? [1]
(a) Carbon dioxide
(b) Hydrogen
(c) Oxygen
(d) Nitrogen

30. Which of the following observation is true about dilute solution of acetic acid? [1]
(a) It smells like vinegar and turns red litmus blue.
(b) It smells like onion and turns blue litmus blue.
(c) It smells like orange and turns red litmus blue.
(d) It smells like vinegar and turns blue litmus red.

31. Yeast and Amoeba comes under [1]
(a) Unicellular prokaryotes
(b) Multicellular eukaryotes
(c) Unicellular eukaryotes
(d) Multicellular prokaryotes

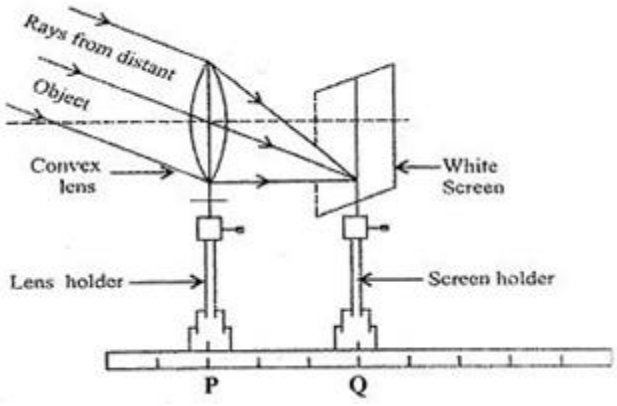
33. Pseudopodia in Amoeba means: [1]
(a) True foot
(b) Walking legs
(c) False hand
(d) False foot

34. Student A, B and C were given five raisins each of equal weight. The raisins were soaked in distilled water at room temperature. A removed the raisins after 20 minutes: B after two hours and C after 40 minutes. If PA, PB, and PC denote percentage absorption of water obtained by student A, B and C respectively, then [2]
(a) $P_A > P_B > P_C$
(b) $P_A < P_B < P_C$
(c) $P_A < P_B > P_C$
(d) $P_A = P_B = P_C$

35. An unknown substance A reacts with sodium hydrogen carbonate to produce sodium acetate, substance B and carbon dioxide. Predict both substance A and B.

$A + NaHCO_3 \longrightarrow CH_3COONa + B + CO_2$ [2]

36. The adjoining figure shows the formation of an image by a convex lens on the white screen. The distance between the points P and Q gives the: [2]



(a) Radius of curvature of the lens
(b) Twice the focal length of the lens
(c) Focal length of the lens
(d) Aperture of the lens