

**CBSE
Class X Science
Sample Paper - 11**

Time: 3 hrs

Total Marks: 80

General Instructions:

- The question paper comprises five sections – A, B, C, D and E. You are to attempt all the sections.
- All questions are compulsory.
- Internal choice is given in sections B, C, D and E.
- Question numbers 1 and 2 in Section A are one mark questions. They are to be answered in one word or in one sentence.
- Question numbers 3 to 5 in Section B are two marks questions. These are to be answered in about 30 words each.
- Question numbers 6 to 15 in Section C are three marks questions. These are to be answered in about 50 words each.
- Question numbers 16 to 21 in Section D are five marks questions. These are to be answered in about 70 words each.
- Question numbers 22 to 27 in Section E are based on practical skills. Each question is a two marks question. These are to be answered in brief.

Section A

1. Mention two processes by which a plant can develop seeds without fertilisation. (1)
2. Give two roles of decomposers in an ecosystem. (1)

Section B

3. Why do fish die when taken out of water? (2)
- OR**
- What protects the trachea from collapsing?
4. What will be the current flowing through an electric bulb of 50 Watt when it is connected to a supply of 220 V? (2)

- 5.
- (a) What property do all elements in the same column of the periodic table as boron have in common?
- (b) What property do all elements in the same column of the periodic table as fluorine have in common? (2)

Section C

6. What would you observe when (3)
- (a) Blue litmus is introduced into a solution of hydrogen chloride gas.
- (b) Red litmus paper is introduced into a solution of ammonia in water.
- (c) Red litmus paper is introduced in caustic soda solution.

OR

What are the three chemicals formed by common salt and how are they formed?

7. What is the role of the following in the human digestive system? (3)
- (a) Mucus
- (b) Bicarbonate
- (c) Trypsin
8. (3)
- (a) What is the molecular formula and structure of the alcohol which can be thought to be derived from pentane?
- (b) Write the names of the following functional groups:
- (i) $-\text{CHO}$ (ii) $-\text{OH}$ (iii) $-\text{COOH}$ (iv) (v) $-\text{X}$
- (c) What makes the candle flame yellow and luminous?

9. State and explain the principle of the electric motor. State the transformation of energy in the electric motor. (3)
10. Define refractive index. If light enters from air to glass having a refractive index 1.5, then calculate the speed of light in glass. (3)
11. The image of an object placed at 40 cm in front of a lens is obtained on a screen at a distance of 100 cm from it. Find the focal length of the lens. What would be the height of the image if the object is 4 cm high? (3)

OR

A concave mirror produces a two times magnified real image of an object placed at 20 cm in front of it. What is the position of the image? (3)

12. A housewife wanted her house to be whitewashed. She bought 10kg of quick lime from the market and dissolved it in 30 litres of water. On adding lime to water, she noticed that the water started boiling even when it was not being heated. Give reason for her observation. Write the corresponding chemical equation and name the product formed. (3)

13. Why is it necessary to separate oxygenated and deoxygenated blood in mammals and birds? (3)

OR

Tooth enamel is one of the hardest substances in our body. How does it undergo damage due to eating chocolates and sweets?

14. How do Mendel's experiments show that (3)
(a) traits may be dominant or recessive
(b) traits are inherited independently

15. We hear and read about female foeticide which is a wrong practice. In some families, be it rural or urban, females are tortured for giving birth to a girl child. They do not seem to understand the scientific reason behind the birth of a boy or a girl. In your opinion, is the approach of society towards the mother in this regard correct or not? Explain the scientific reason. (3)

Section D

16.
(a) Write three main steps which take place in the chloroplast during photosynthesis.
(b) How do stomata open and close?
(c) Which raw material is made available to plants for photosynthesis? (5)

OR

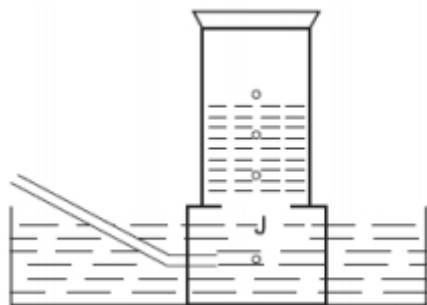
With the help of suitable diagrams, explain the various steps of budding in Hydra.

17. What is meant by linear magnification? Write the formula for magnification of spherical mirrors. What is the unit of magnification? Explain.
What is the nature of the image if the magnification is positive and negative? (5)

OR

- (a) Define:
i. Principal focus of a convex lens
ii. Optical centre
(b) State the lens formula.
(c) Magnification produced by a spherical lens is -1 . What is the nature of the image and lens?

18. A metal is treated with dilute sulphuric acid. The gas evolved is collected by the method shown in the following figure. (5)



Answer the following.

- (i) Name the gas.
(ii) Name the method of collection of the gas.
(iii) Is the gas soluble or insoluble in water?
(iv) Is the gas lighter or heavier than air?
(v) Name the most reactive and the least reactive metal.

OR

A compound X which is prepared from gypsum has the property of hardening when mixed with a proper quantity of water.

- (a) Identify compound X.
(b) Write the chemical equation for its preparation.
(c) For what purpose is it used in hospitals?

19. (5)

- (a) State and explain the heating effect of electric current.
(b) A potential difference of 220 V is applied across a resistance of 400 ohms in an electric heater. Calculate
(i) The electric current passing through the heater.
(ii) Heat energy produced in joules in 5 seconds.

20. (5)
- (a) Give three advantages of rain-harvested water stored underground.
- (b) 'Forests cannot be conserved only by legislation; local human intervention is also required'. Justify your answer with two examples.
21. Buckminsterfullerene is a spherical molecule in which 60 carbon atoms are arranged in interlocking hexagonal and pentagonal rings of carbon atoms.
- (a) How many hexagons of carbon atoms are present in one molecule of buckminsterfullerene?
- (b) How many pentagons of carbon atoms are present in one molecule of buckminsterfullerene?
- (c) How is it related to diamond and graphite?
- (d) Why is diamond used for making cutting tools but graphite is not?
- (e) Why graphite is used for making dry cell electrodes but diamond is not?

Section E

22. A student is observing a permanent slide showing sequentially the different stages of asexual reproduction taking place in yeast. Name this process and draw diagrams of what he observes in a proper sequence. (2)
23. What are the steps to study the different parts of an embryo of pea seeds? (2)
- OR**
- During the course of an experiment, at what time intervals are the raisins weighed to determine the percentage of raisins absorbed?
24. What is the pH of neutral solution at 25°C? Calculate the pH value of 10^{-2} M HNO_3 solution. (2)
- OR**
- (a) If a solution changes the colour of litmus paper from red to blue, what can you say about its pH?
- (b) What can you say about the pH of a solution which liberates carbon dioxide from sodium carbonate?
25. Two beakers A and B contain ferrous sulphate solution. A small piece of copper is placed in beaker A, and a small piece of zinc is placed in beaker B. What will you observe when the metal pieces are taken out after five minutes? (2)
26. A straight thick wire is hanging from a wooden board. An anti-clockwise magnetic field is produced around the wire by passing a current through the wire by using a battery. Which terminal of the battery is connected to
- (i) the top end of the wire
- (ii) the bottom end of the wire (2)

27. Radhika uses spectacles made of two thin lenses kept in contact with each other. Find the focal length of a combination of lenses if the individual power of the lens is +2.5 D and -1.5 D. (2)

OR

A glass prism is kept immersed in a liquid as shown in the figure. A ray of light passes through the prism undeviated. What do you infer about the refractive index of the liquid as compared to that of glass?

