

CBSE
Class IX Science
Sample Paper – 7

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.
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Section A

1. Name two breeds of cows selected for long lactation period. (1)
2. List the aspects involved in the cycling of nutrients. (1)

Section B

3. What makes the biosphere dynamic but a stable system? (2)

OR

Define eutrophication. What is its ill-effect on the ecosystem?

4. A ball weighing 15 N falls from a height of 30 metres. Calculate the energy it had when it was at rest. What is the form of energy it experiences once it reaches the ground? (consider $g = 10 \text{ m/s}^2$) (2)
5. Explain the sedimentation and decantation methods.

Section C

6. (3)
- (a) Draw a sketch of Bohr's model of an atom with three shells.
- (b) If the K, L and M shells of an atom are full, then what would be the total number of electrons in the atom?
- (c) What is the maximum number of electrons which can be accommodated in a shell?
7. Write the symptoms when the following organs are targeted by microbes. (3)
- (a) Lungs
- (b) Liver
- (c) Brain

OR

'It is more difficult to make antiviral medicines than antibiotics'. Justify this statement.

8. Give reasons: (3)
- (a) Why should we wear cotton clothes in summer?
- (b) Why do we see water droplets on the outer surface of a glass containing ice-cold water?
- (c) How does it feel when a nurse applies spirit at the injection site?
9. A stone is tied to a string and is continuously revolved in circular motion. What is the displacement of the stone? What is the work done if the force applied to revolve the stone is 30 N? (3)
10. Write the expression for Newton's law of gravitation and give explanation of all the terms in the expression. What is the SI unit of the gravitational constant? (3)
11. A metal plate of mass 30 kg and diameter 100 cm is placed on a stand. Calculate the pressure acting on the stand. (3)

OR

Calculate the orbital velocity in unit km/s of the Earth around the Sun if the distance between the Earth and the Sun is 1.49×10^8 km. (Total time taken by the Earth for revolution = 3.15×10^7 seconds) (3)

12. Calculate the ratio of moles of 3.6 g of water and 4.4 g of carbon dioxide. Atomic mass of C = 12 u, H = 1 u, O = 16 u. (3)

OR

Write the names of compounds:

(i) $Al_2(SO_4)_3$

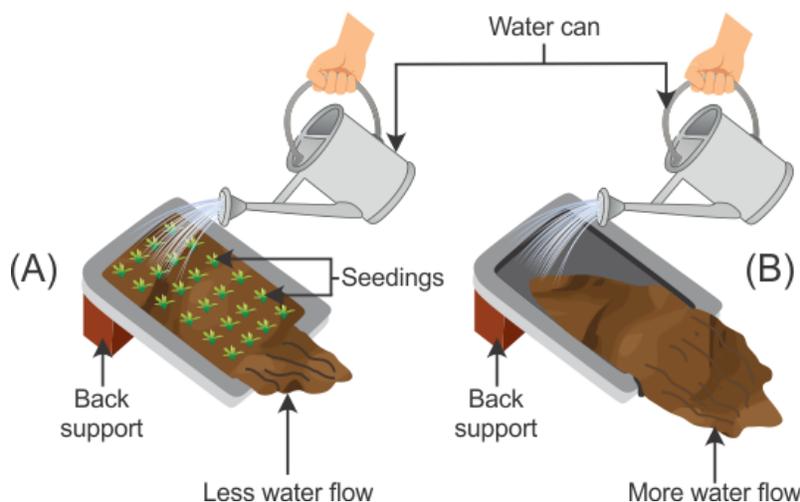
- (ii) CaCl_2
- (iii) K_2SO_4

13. Samar's father owned an orchard in the Kashmir valley where apples grow in abundance. In the flowering season, Samar observed honeybees on the flowers. He quickly asked his father to start working on the idea of establishing an apiary. (3)

- (a) Name the species of honeybee which is commonly used in India for the commercial production of honey.
- (b) Write two advantages of bee keeping.
- (c) List two qualities of Samar which are worth praising.

14. What would happen if all the cells of our body were of the same shape and size? (3)

15. Two similar plastic trays A and B filled with soil and manure are taken. In Tray A, mustard seeds are sown and watered for 4–5 days until they germinate into seedlings, and the seedlings grow into small plants. Watering of Tray A is stopped for the next 2–3 days, and the small plants are allowed to grow. Trays A and B are placed on a brick in a tilted position as shown in the figure. Now both trays are watered with equal amount of water using a water can. (3)



Answer the questions given below:

- (a) Name the natural phenomenon indicated in Tray B.
- (b) Less water flows out from Tray A. Give reason.
- (c) Why is the top layer of soil considered the most important layer?

Section D

16. (5)

(a) Give two examples of each:

- (i) Organisms with a soft body covered with a calcareous shell.
- (ii) Organisms with jointed legs and no wings.
- (iii) Organisms with a spiny body and radial symmetry.

(b) Classify the following into cold-blooded and warm-blooded animals:

Rohu, Bat, Pigeon, Salamander

17. (5)

(a) A man pulls a trolley through a distance of 20 metres on a smooth horizontal surface. The handle of the trolley makes an angle of 30° with the horizontal surface. If the force applied by the man is 30 N, then calculate the work done in pulling the trolley.

(Given: $\sqrt{3} = 1.732$)

(b) Define power. Is power a scalar or vector quantity?

OR

(a) What is the amount of work done:

- i. By an electron revolving in a circular orbit of radius 'r' around a nucleus?
- ii. By an electron moving with half the speed of light in an empty space free of all forces?

(b) An electronic pump is used to pump water from an underground sump to the overhead tank situated 20 m above. It transfers 2000 kg of water to the overhead tank in 15 minutes. Calculate the power of the pump.

What do you mean by instantaneous power of a device?

18.

(a) Which metal did Rutherford select for his α particle scattering experiment and why?

(b) Which part of atom was discovered (5)

OR

(a) Describe Rutherford's model of an atom.

(b) Write the electronic configuration of the elements whose atomic numbers correspond to 7 and 19.

19.

(a) An object weighs 40 N on the Earth. What will be its weight on the Moon? Calculate the mass of this object on the Moon. ($g = 10 \text{ m/s}^2$)

(b) A man is standing 30 metres away from a large wall and calls his friend and hears an echo. After what time does he hear an echo? (Speed of sound in air = 330 m/s)

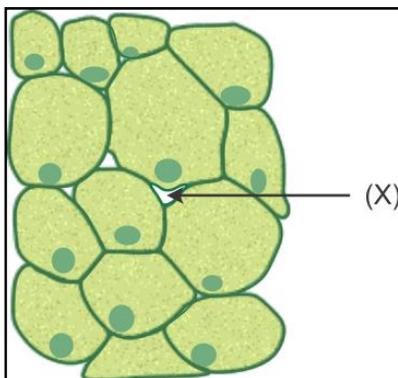
20. (5)
- (a) Explain how the bark of a tree is formed. How does it act as protective tissue?
 - (b) What will happen if all the blood platelets are removed from blood?

OR

- (a) Give the location and function of the following tissues:
 - (i) Cartilage
 - (ii) Areolar tissue
 - (iii) Adipose tissue
 - (b) Name the tissue which shows the following features:
 - (i) Cells are dead; cells show thickening; provides mechanical support to plants; made up of one type of cells.
 - (ii) Cells are living; cells contain green-coloured chloroplast; possess intercellular spaces.
21. (5)
- (a) What happens when a liquid is left exposed to air?
 - (b) List the factors which affect the rate of evaporation and explain their effect on it.

Section E

22. Observe the figure carefully. (2)



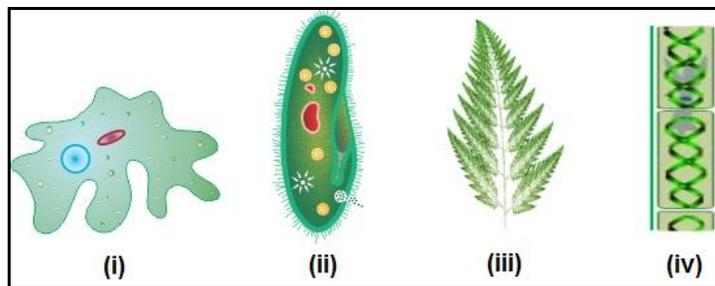
- (a) What does X represent? What is its function?
- (b) Which plant tissues show the presence of X?

OR

Rita observed a temporary mount of an onion peel under the microscope.

- (a) Which characteristics would have been noted by Rita?
- (b) Which stain is used to observe the cells of an onion peel?

23. Study the given organisms and answer the questions based on them. (2)



- (a) Which of these organisms belong to Kingdom Protista?
- (b) Write any one salient feature of the division to which plants (iii) and (iv) belong.

24. Which of the following will show Tyndall effect? (2)

- (a) Salt solution
- (b) Milk
- (c) Copper sulphate solution
- (d) Starch solution

25. Explain how both physical and chemical changes take place during the burning of a candle. (2)

OR

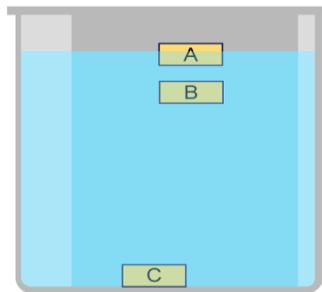
Classify the following into physical or chemical change:

Freezing of water, rusting of almirah, Digestion of food, Explosion of crackers

26. Check the following combination of solid and liquid and note down what will be the position of a solid in a liquid in the beaker. Give reason for the same.

Positions A, B and C mean that the object floats on liquid, the object just floats on liquid and the object sinks in liquid, respectively.

(2)



- i) Wooden block and water
- ii) Ice and water
- iii) Iron nail and mercury

27. Distinguish between longitudinal waves and transverse waves. (Give two points each)

OR

Rohan is strumming a guitar. When a string of the guitar is plucked, it produces vibrations. What kind of waves are produced here? Give reasons for your answer. (2)