

CBSE
Class IX Science
Sample Paper - 4

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. What is crop rotation? (1)
2. Define nitrogen fixation. (1)

Section B

3. List any two measures to prevent soil erosion. (2)

OR

Mention the three aspects of nutrient cycling in the ecosystem.

4. A car from rest moves with a uniform acceleration of 3 m/s^2 for 9 minutes. Calculate the acquired speed and the distance travelled in this time. (2)
5. What is meant by evaporation? How does evaporation cause cooling? (2)

Section C

6. Explain the drawbacks of Rutherford's model of an atom. (3)

7. (3)

(a) Discuss two ways of incorporating desirable characteristics into crop varieties.

(b) How are crops selected for intercropping?

OR

What harm can be caused to crops if they are excessively irrigated?

8. Give reasons: (3)

(a) What happens when acetone is poured on the palm?

(b) Water kept in an earthen pot becomes cool in summer.

(c) We are able to sip hot tea from a saucer rather than from a cup.

9. A wave pulse on a string moves at a distance of 8 m in 0.05 s. (3)

(a) Find the velocity of the pulse.

(b) What would be the wavelength of the wave on the same string if its frequency is 200 Hz?

10. Although a stone and the Earth attract each other with equal force, why do we observe that only the stone falls towards the Earth but the Earth does not rise towards the stone? Explain. (3)

11. A wooden cuboid has a mass of 10 kg. The length, breadth and height of this wooden cuboid are 100 cm, 50 cm and 20 cm, respectively. Find the pressure on the floor on which this block is kept. (3)

OR

Define 1 joule of work. What is the relation between joule and erg?

12. How many grams of oxygen gas contain the same number of molecules as 16 grams of sulphur dioxide gas? (O = 16 u, S = 32 u) (3)

OR

Write the chemical formula of the following using the criss-cross method: (3)

(a) Calcium nitride

(b) Calcium hydride

(c) Sodium carbonate

13. Neha was suffering from chicken pox for two weeks. Her friends called her and insisted that she join them for the school picnic. She refused and decided to stay at home. (3)
- (a) Which organism causes chicken pox?
(b) List another disease which spreads through the same mode of transmission.
(c) Mention any two values exhibited by Neha by not joining her friends for the picnic.
14. Why does a person start vomiting after consuming a concentrated salt solution? (3)
15. What may be the reasons for mass mortality of fish in a pond? (3)

Section D

16. (5)
- (a) Name the tissue which
- (i) Stores fat in our body
(ii) Connects muscles to bones
(iii) Transports food in plants
- (b) List any two points of differences between collenchyma and sclerenchyma.
17. (5)
- (a) Work done by a force is given by the equation $W = F \cos \theta \times s$. Determine and explain the effect of work done due to a gradually decreasing angle ' θ '.
- (b) A car is being driven by a force of 5×10^{10} N. When travelling at the speed of 10 m/s, it takes two minutes for this car to reach the river side. Calculate the work done.
18. Compare the properties of solids, liquids and gases with respect to (5)
- (i) Shape
(ii) Volume
(iii) Compressibility
(iv) Diffusion
(v) Fluidity or rigidity

OR

What is covalency? Explain the formation of a covalent bond with the help of an example.

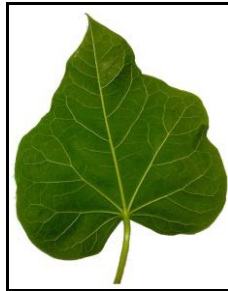
19. (5)
- (a) A man weighs 300 N on the surface of the Earth. If he were taken to the Moon, his weight would be 50 N. Calculate the mass of this man on the Moon ($g = 10 \text{ m/s}^2$).
- (b) A man hears an echo of thunder 2 seconds after lightning strikes. Calculate the distance of lightning from the man (Speed of sound in air = 330 m/s).

OR

- (a) Using Newton's law of motion, derive the relation between force and acceleration.
- (b) Define one newton.
- (c) Which would require a greater force to accelerate—a 0.5 kg mass at 5 m/s^2 or a 4 kg mass at 2 m/s^2 ? Give reasons.

20. (5)

- (a) Why do biologists think that arthropods are the most successful of all animals?
- (b) What is venation? Mention any one plant which bears the following type of venation.



OR

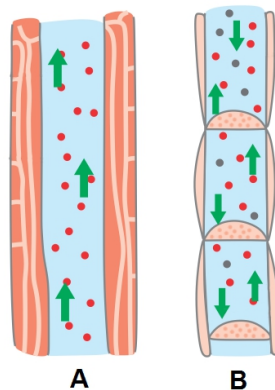
- (a) List any six flight adaptations in birds.
- (b) Identify the animal groups having
 - (i) spinal body with radial symmetry
 - (ii) light and hollow bones
 - (iii) soft body with calcareous shells
 - (iv) four pairs of jointed legs and no wings

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 figures A and B given below. (2)



- (a) List the elements present in tissue A.
- (b) Which of these tissues helps in the transport of food in plants?

23. Rekha observed rhizome and circinate leaves in the given specimen.

(2)

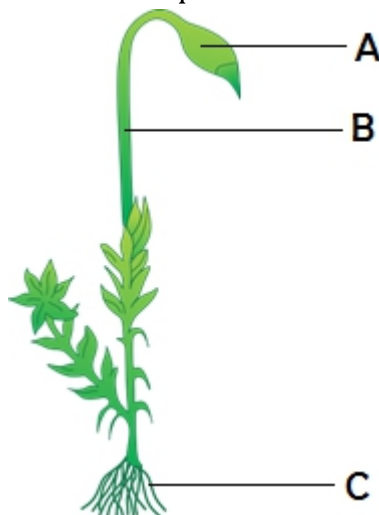


(a) Which specimen has she observed?

(b) To which group of plants does this specimen belong?

OR

Observe the figure below and answer the questions based on it.



(a) To which division does *Funaria* belong?

(b) Which part of *Funaria* (moss) plant labelled in the figure above helps in fixation of the plant to the soil?

24. How will you separate the following:

(2)

- (i) Salt and sea water mixture
- (ii) Poison from contents of bladder
- (iii) Components of ink
- (iv) Pure alum from impure sample

OR

To separate a mixture of sand, iron filings and sulphur, a student added carbon disulphide to the mixture in a test tube and shook it well. He observed that one component dissolved. Identify the component and suggest the methods for separation of the remaining two components.

25. Describe what happens when we burn a piece of paper. What type of a change is it? (2)

26. While determining the density of the material of a body, a student recorded the following observations: (2)

(a) Mass of the body = 62.4 g

(b) Reading of the water level in the measuring cylinder without the body = 16.4 ml

(c) Reading of the water level in the measuring cylinder with the body = 24.4 ml

Based on these observations, what will be the density of the material of the body in kg m^{-3} ?

OR

To establish the relationship between the weight of a wooden block lying on a horizontal surface and the minimum force required to just move it using a spring balance, two students performed the experiment with the cuboid of the same dimensions and the same weight. Student A placed the cuboid on sand paper, while Student B placed it on wood mica. What is the relation between the applied forces in the spring balance for the two substances? Why?

27. What is the measure of the angle of reflection in the figure below? (2)

