CBSE
Class IX Science
Sample Paper - 5

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. Name the bacterium capable of nitrogen fixation in the root nodules of legumes. (1)

2. A farmer grows gram crop between two cereal crops. What agricultural practice is he following? (1)

Section B

3. State Newton's third law of motion and gravitation. (2)

OR

Name the physical quantity whose unit is

(i) $kg\ ms^{-2}$

(ii) Nm^2kg^{-2}

4. What are nucleons? How many nucleons are present in sodium?

5. Why do animals in colder regions have a thicker layer of subcutaneous fat on their body? (2)

Section C

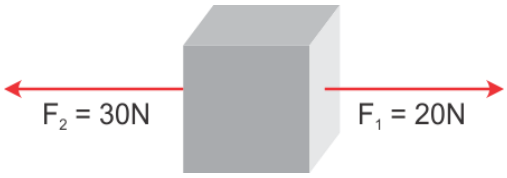
6. Name the following: (3)
(a) Storage sac of the cell
(b) Packaging and dispatching unit of the cell
(c) Powerhouse of the cell

7. Identify the phyla based on the characteristics stated below. (3)
(a) Jointed appendages
(b) Locomotion by setae
(c) Body perforated with numerous pores

OR

How are bony fish different from cartilaginous fish? List any three points of differences.

8. Two forces F_1 and F_2 act on an object as shown. (3)



(i) What must be the force added to F_2 or F_1 so as to make the net force the balanced force?
(ii) How much force is required to be exceeded on F_1 so that the net force will act along the direction of F_1?
(iii) After exceeding the force F_1 as per the condition mentioned in question (ii) and if mass of the object is 10 kg, then what will be the acceleration produced in it?

9. Define reflection of sound and state its laws. (3)

OR

What is SONAR? For what is it used? Explain its working in brief.

10.
(a) List any two factors which need to be considered for fish culture. (1)
(b) Explain composite fish culture with the help of an example. (2)

11. Snakes and turtles are so different in their behaviour. Snakes are often poisonous, while turtles are harmless. Yet why are they grouped in the same class? (3)

12. Calculate the number of aluminium ions in 0.051 g of Al_2O_3.
(Atomic mass of Al = 27 u, O = 16 u, Avogadro's No. = 6.022×10^{23} mol^{-1}) (3)

OR

Give the names of the elements present in the following compounds:
(a) Quick lime
(b) Hydrogen bromide
(c) Baking powder
(d) Potassium sulphate

13. What will happen to the object in the following cases? (3)
(i) If a block of wood is thrown into water. Give reason for the same.
(ii) If an object of the same density as that of water is thrown into water.
(iii) If a glass piece is thrown into water. Give reason for the same.

14. Sheetal and Sneha were asked to take 4.5 g of sodium carbonate and 5.5 g of ethanoic acid to make 1.5 g of carbon dioxide, 0.9 g of water and 8.2 g of sodium ethanoate. Sheetal followed the instructions, but Sneha took the chemicals without measuring their amounts. (3)

(a) Whose activity do you think will be in agreement with the law of conservation of mass?
(b) State the law of conservation of mass.
(c) Whose method do you like and why?

15. Compare Dalton's atomic theory with the Modern atomic theory.

Section D

16. (5)

(a) State three features of the nuclear model of an atom put forward by Rutherford.

(b) Explain the rule according to which electrons are filled in the various energy levels.

17. (5)

(a) What would be the impact of an increase in the concentration of carbon dioxide in the atmosphere?

(b)

(i) What do you mean by biogeochemical cycles? Name any two biogeochemical cycles.

(ii) Nitrogen cycle is called a perfect cycle in nature. Explain.

18. (5)

(i) A girl weighing 500 N climbs a vertical ladder. Calculate the work done by her after climbing 3 m. ($g = 10\ m/s^2$)

(ii) Name the effect of force which occurs when

a) A moving ball is hit by a bat.

b) A dough ball is pressed by a rolling pin (*belan)*.

c) Breaks are suddenly applied to a moving car.

19. (5)

(i) What is retardation also called? Why is it called so? State whether it is a scalar or vector quantity.

(ii) The speed of a bike decreases from 40 m/s to 30 m/s in 5 seconds. Calculate the acceleration of the bike.

(iii) What is the distance travelled during this time by the bike?

OR

A car travels the first 40 km at a speed of 30 km/h, the next 60 km are covered at 36 km/h and the final 80 km at 40 km/h. What is the average speed attained by the car over the entire journey?

20. (5)

(a) Name a non-metallic element found in (i) liquid and (ii) gaseous states.

(b) Pick the metalloid from the following: Carbon, silicon, phosphorus and gold.

(c) Which two properties of metals enable us to give metals the desired shape?

(d) Name a metal which is liquid at room temperature.

OR

How are the following mixtures separated?

(a) Mixture of alcohol and water
(b) Coloured dyes in black ink
(c) Salt solution
(d) Iron and sulphur
(e) Carbon tetrachloride and water

21. (5)

(a) Under which of the following conditions is a person most likely to fall sick and why?
(i) When a person is recovering from malaria
(ii) When a person has recovered from malaria and is taking care of someone suffering from chicken pox
(iii) When a person is on a four-day fast after recovering from malaria and is taking care of someone suffering from chicken pox

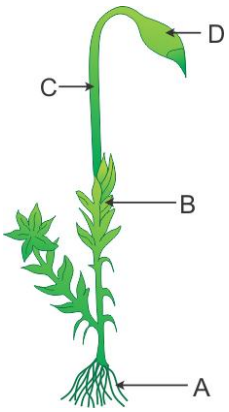
(b) Why do antibiotics not work against viruses?

OR

State one point of difference between
(a) Blood and lymph
(b) Bone and cartilage
(c) Tendon and ligament
(d) Areolar and adipose tissues
(e) Xylem and phloem tissues

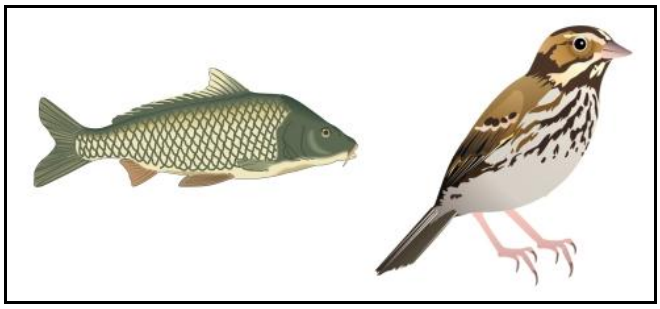
Section E

22. Observe the figure carefully. (2)



(a) Which plant is shown in the figure? Write its classification.
(b) Identify the parts A, B, C and D.

23. Observe this picture of a fish and a bird. (2)



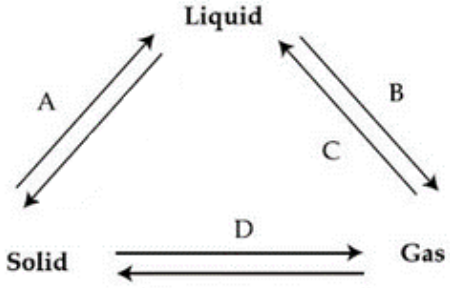
(a) Which striking feature enables both of them to be placed in the same phylum?
(b) List any one important adaptation in case of birds and fish.

OR

Give any two features to categorise a plant into monocot or dicot.

24. The following triangle exhibits interconversion of the three states of matter. Complete the triangle by labelling the arrows marked A, B, C and D.

(2)



OR

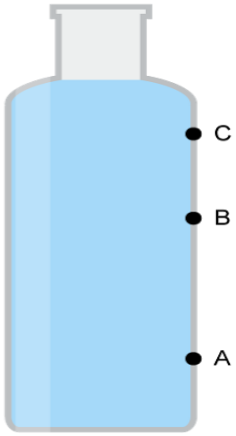
Element A has valency 1 and element B has valency 2. Diagrammatically show how a compound is formed by elements A and B, and give the formula of the compound. (2)

25. 10 g of iron filings are mixed with 6 g of sulphur and strongly heated in a test tube. (2)
The substance formed is ground in a pestle and mortar.
What will be the appearance of the substance formed?
Is it possible to separate the constituents of the new substance by physical means?

26. Time taken by ultrasonic sound to reach a SONAR receiver is 3 seconds. What is the depth of the sea in this region? (Speed of sound in water = 1500 m/s) (2)

OR

27. Three pinholes A, B and C are made in a plastic bottle. At which of the three holes is the pressure of the liquid the highest? Give reason for the same.



OR

A chef is provided with two knives. Knife A has an edge of surface area of 0.25 cm^2 and knife B has an edge of surface area 0.30 cm^2. Which of these knives make the work easier for the chef while cutting the vegetables? Why?