

CLASS IX (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-2

Time : 3 Hours

Maximum Marks : 80

General Instructions :

- (i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
- (ii) All questions are compulsory.
- (iii) Internal choice is given in each sections.
- (iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
- (v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
- (vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
- (vii) This question paper consists of a total of 30 questions.

SECTION - A

- Q1. When a body is stationary : [1]
- (a) There is no force acting on it.
 - (b) The force acting on it is not in contact with it.
 - (c) The combination of forces acting on it balances each other.
 - (d) The body is in vacuum.

OR

A ball is rolling down a slope at a steady speed. Which of the following statements is correct?

- (a) Frictional force is greater than the forward force.
 - (b) There is an unbalanced force downwards.
 - (c) There are no forces acting on the ball.
 - (d) The forces acting on the ball are balanced.
- Q2. A 1 kg mass falls from a height of 10 m into a sand box. What is the speed of the mass just before hitting the sand box? If it travels a distance of 2 cm into the sand before coming to rest, what is the average retarding force? [1]
- (a) 12 ms^{-1} and 3600 N
 - (b) 14 ms^{-1} and 4900 N
 - (c) 16 ms^{-1} and 6400 N
 - (d) 18 ms^{-1} and 8100 N
- Q3. What does the mass number of an atom represent? [1]
- (a) Only the number of protons.
 - (b) The sum of protons and neutrons.
 - (c) The sum of protons and electrons.
 - (d) Only the number of neutrons.
- Q4. If the distance between two bodies is increased by 25%, then the % change in the gravitational force is : [1]
- (a) Decreases by 36%
 - (b) Increases by 36%
 - (c) Increases by 64%
 - (d) Decreases by 64%
- Q5. Which one of the following is a liquid non-metal? [1]
- (a) Gallium
 - (b) Bromine
 - (c) Lead
 - (d) Hydrogen
- Q6. Which of the following are negative effects on the environment from the excessive use of fertilizers in a farm situated near a lake? [1]
- (a) Decreased oxygen content in the water.

- (b) Decreased light penetration in the water.
- (c) Decreased population of aquatic organisms.
- (d) All of these.

OR

Which is a desirable characteristic in poultry?

- (a) Low maintenance requirements.
- (b) Reduced quality of chicken.
- (c) Low tolerance to high temperature.
- (d) Large size of the egg laying bird.

DIRECTION : For question numbers 7 and 8, two statements are given- one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :

- (a) Both A and R are true and R is correct explanation of the A.
- (b) Both A and R are true but R is not the correct explanation of the A.
- (c) A is true but R is false.
- (d) Both A and R are false.

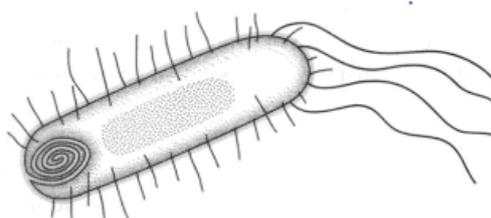
- Q7. **Assertion (A) :** Plasma membrane is a selectively permeable membrane. [1]
Reason (R) : Plasma membrane allows entry and exit of substance from cell through the process of diffusion.
- Q8. **Assertion (A) :** The growth of plants occurs only in certain specific regions. [1]
Reason (R) : Meristematic tissue is located only at certain points in a plant.
- Q9. The period of revolution of a certain planet in an orbit of radius R is T. Its period of revolution in an orbit of radius 4R will be : [1]
 (a) 2 T (b) $2\sqrt{T}$
 (c) 4 T (d) 8 T
- Q10. The HIV viruses spread from an infected person to a healthy person by [1]
 (a) Blood transfusion (b) Sexual intercourse
 (c) Placental transfusion (d) All of the above

OR

HIV virus attacks one of the following cells in our body. Which one?

- (a) Red blood cells (b) White blood cells
- (c) Liver cell (d) None of the above

- Q11. What are the two laws of chemical combination? [1]
- Q12. Why do bicycles begin to slow down when we stop pedalling? [1]
- Q13. Answer question numbers 13.1–13.4 on the basis of your understanding of the following paragraph and the related studied concepts. [1]
 Mohan had a biology practical exam. The biology laboratory in his school had lots of microscopes of different precision. When he reached the laboratory, he found that many microscopes were already mounted with a slide. Just for fun, he went and looked at a slide through the microscope and found the above image. He wasn't able to identify the organism or type of organism, so he called his friend Shyam to look at the slide. Shyam found out immediately what kind of organism this was.



13.1 What is this organism? [1]

- 13.2** How did Shyam find out the kind of organism? [1]
13.3 Give two examples of such kind of organisms. [1]
13.4 What should a person ensure before looking at a slide through a microscope? [1]

- Q14. Questions 14.1 to 14.4 are based on the Table A. Study this table related to melting points and boiling points of different substances and answer the following questions. [1]

Table : A

Component name	Boiling point (°C)	Melting point (°C)
Carbon dioxide	-57	-78
Propane	-42	-188
Ethanol	78.4	-114
Water	100	0
Glycerol	290	17.8

- 14.1** Name the substances from Table A that we can find in liquid state at room temperature (25 °C) [1]
14.2 We are heating a bowl of water and a bowl of ethanol separately. We start from the same temperature and heat them on a similar kind of flame. Which bowl will get empty first? [1]
14.3 What does the melting point of a solid indicate? [1]
14.4 Glycerol is heated from 0 °C to 50 °C. When the temperature reaches 17.8 °C, the temperature remains constant for a while and only after some time, it starts to increase again. Why? [1]

SECTION - B

- Q15. When a body covers equal distances in equal time intervals, its velocity can be variable. Explain giving an example. [3]
 Q16. Suresh's mother mixed oil and water in kitchen by mistake. Suresh told her that he can separate the mixture. Name the technique used by Suresh and explain how he will do. Draw the diagram and write the principle of this technique. [3]
 Q17. Draw well labelled diagrams of various types of muscles found in human body. [3]
 Q18. (a) A body of mass 9 kg is lying on a surface of table. Calculate the net force acting on it. [3]
 (b) Do all action and reaction forces produce acceleration of equal magnitudes in both objects? Why or why not?
 (c) A balloon is inflated and released. Why does it fly forward as air escapes out of it?

OR

Explain the process of rocket propulsion in the light of Newton's third law of motion.

- Q19. List some adaptations of reptiles towards terrestrial mode of life. [3]
 Q20. Define force. What are the various types of forces? Mention at least four. [3]

OR

Why does a block of wood released under water come up to the surface of water?

- Q21. Explain in details the structure of nucleus with the help of a diagram. [3]
 Q22. Comment on the following statements: [3]
 (a) Rate of evaporation of an aqueous solution decreases with increase in humidity.
 (b) Evaporation produces cooling.
 (c) Conversion of solid state to liquid state is called fusion. What is meant by latent heat of fusion?

OR

- (a) Which gas is supplied to hospitals in cylinders for artificial respiration?
 (b) What does the diffusion of gases tell us about their particles?
 (c) Why do liquids easily flow?

- Q23. A car travels at 54 km/h for first 20s, 36 km/h for next 30 s and finally 18 km/h for next 10 s. Find its average speed. [3]

- Q24. What are the main practices involved in keeping of animals or animal husbandry? [3]

SECTION - C

- Q25. (a) Force necessary to change the momentum of an object depends on the time rate at which momentum is changed." Discuss with an example.
(b) What would be the force required to produce an acceleration of 4 m/s² on a body of mass 12 kg? [5]

OR

State which of the following situations are possible and give an example for each of these.

- (a) An object with acceleration but with zero velocity.
(b) An object moving in a certain direction with an acceleration in the perpendicular direction.
- Q26. (a) List any four properties of a colloid and mention any two properties in which colloids differ from suspension.
(b) Why does solution of sodium chloride not show tyndall effect whereas the mixture of water and milk shows?
(c) Write one difference between concentration and solubility? [5]
- Q27. Why is mitochondria called 'powerhouse of cell'? Give three similarities and one difference between mitochondria and plastid. [5]

OR

Correlate the structure and location with the function in case of:

- (a) Simple squamous epithelium
(b) Columnar epithelium
- Q28. Describe the water cycle with the help of a diagram. [5]
- Q29. (a) What was missing in Thomson's model of the atom?
(b) Write any two observations of Rutherford's model of atom. [5]

OR

- (a) Why does an atom of argon have zero valency? Explain using the electronic configuration of argon.
(b) Define valency by taking the examples of magnesium (At. No. = 12) and oxygen (At. No. = 8).
(c) With the help of schematic representation of atomic structure of magnesium and sulphur, explain how electrons are distributed in different orbits.
- Q30. (a) A stone is allowed to fall from a tower of height 200 m and at the same time another stone is projected vertically upwards from the ground at a velocity of 20 m/s. Calculate when and where the stones will meet.
(b) The walls of your classroom are in motion but appear stationary. Explain [5]

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