



**ST. MARGARET SR. SEC. SCHOOL
MID TERM EXAMINATION 2023-24**

SUB: SCIENCE

CLASS: IX

SAMPLE PAPER

Time: 3Hr

M.M: 80

General Instructions:

This question paper consists of 39 questions in 5 sections.

ii. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

iii. Section A consists of 20 objective type questions carrying 1 mark each.

iv. Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.

v. Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.

vi. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.

vii. Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION A

1. A physical quantity which has both magnitude and direction is called a _____.
(a) scalar quantity (b) vector quantity
(c) neither (a) nor (b) (d) either (a) or (b)
2. A physical quantity which has both magnitude and direction is called a _____.
(a) scalar quantity (b) vector quantity
(c) neither (a) nor (b) (d) either (a) or (b)
3. If the mass of a body is tripled and its velocity remains same, then the linear momentum of the body will
a) remain same b) become tripled
c) Becomes half d) become four times
4. Dirty blanket is beaten with a stick to remove dust particles. Which law holds good for this?
A) Law of conservation of momentum B) Law of inertia
C) Law of impulse D) Law of conservation of energy
5. A body of mass 1kg is attracted by the earth with a force which is equal to
a. 9.8N b. 6.67×10^{11} c. 1 N d. 9.8m/s

6. The value of 'g'
- Increases as we go above the earth's surface
 - Decreases as we go to the center of the earth
 - Remains constant
 - Is more at equator and less at poles
7. In all the three states of water, (i.e. ice, liquid and vapour) chemical composition of water
- is very different
 - remains same
 - sometimes same and sometimes different
 - none of the above
8. The process in which solid is directly converted to vapours state is called ————
- vapourisation
 - solidification
 - condensation
 - sublimation
9. Which of the following conditions is most favourable for converting gas into liquid?
- High pressure, low temperature
 - Low pressure, low temperature
 - Low pressure, high temperature
 - High pressure, high temperature
10. What is true about homogeneous mixture?
- Homogeneous mixture is the mixture of two or more than two components.
 - In homogeneous mixture the composition and properties are uniform throughout the mixture
 - both (a) and (b) are true
 - none of the above
11. Which of the following is not a homogeneous mixture?
- Air
 - Tincture of iodine
 - Sugar solution
 - milk
12. What is the statement? "10 percent glucose in water by mass" signifies.
- 10 gram of glucose dissolved in 100 gram of water.
 - 10 gram of glucose dissolved in 90 gram of water.
 - 20 gram of glucose dissolved in 200 gram of water.
 - 20 gram of glucose dissolved in 90 gram of water.
13. Which of the following statements is incorrect?
- Cytoplasm is also known as protoplasm
 - Lysosomes are known as the suicide bags of the cell
 - Mitochondria has its own DNA
 - All of the above are incorrect
14. An unripe green fruit changes colour when it ripens. The reason being:
- Chromoplasts changes to chlorophyll
 - Chromoplasts changes to chromosomes
 - Chromosomes changes to chromoplasts
 - Chloroplast changes to chromoplasts

15. Cells with evenly thickened, hard, lignified walls are seen in:
a) Collenchyma b) sclerenchyma c) chlorenchyma d) Parenchyma
16. Aerenchyma is
a) Parenchyma cells seen in green leaves
b) Parenchyma cells with large intercellular space.
c) Parenchyma cells with chlorophyll
d) Parenchyma cells with thickened walls .

Each question consists of two statements, namely Assertion (A) and Reason (R). For selecting the correct answer

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

17. ASSERTION: Mass of an object can be zero.

REASON: Mass of an object is a measure of its inertia.

18. ASSERTION: The unbalanced force acting on an object which brings it in motion.

REASON: Force is directly proportional to rate of change of momentum.

19. ASSERTION: When a beam of light is passed through a colloidal solution placed in a dark place the path of the beam becomes visible.

REASON: Light gets scattered by the colloidal particles.

20. ASSERTION: Meristematic cells lack vacuoles.

REASON: Meristematic cells by differentiation give rise to permanent tissues.

SECTION B

21. Explain balanced force with the help of an example.
22. A bullet hits a Sandbox with a velocity of 20 m/s and penetrates it up to a distance of 6 cm. Find the deceleration of the bullet in the sandbox.
23. Explain why particles of a colloidal solution do not settle down when left undisturbed, while they do in the case of a suspension.
24. List the functions of plasma membrane.
25. Distinguish between plant cell and animal cell.
26. Name the dead elements of Xylem. Which among them helps in conduction of water?

SECTION C

27. i) Define SI unit of force.
ii) An astronaut jumps from a spaceship in interstellar space and moves at 30 m/s. Calculate its speed after 5 minutes. (1+2)

- 28.i) Draw a graph to represent an object moving with constant acceleration.
 ii) A motorcyclist drives from A to B with a uniform speed of 30 km/h and returns back with a speed of 20 km h⁻¹. Find its average speed. (1+2)
- 29.i) Define Uniform circular motion.
 ii) The gravitational force between two objects is F. If masses of both the objects are halved without altering the distance between them. What will be the impact on gravitational force? (1+2)
30. Name the process associated with the following
- Dry ice is kept at room temperature and at one atmospheric pressure.
 - A drop of ink placed on the water's surface contained in a glass spreads throughout the water.
 - A potassium permanganate crystal is in a beaker and water is poured into the beaker with stirring.
 - An acetone bottle is left open and the bottle becomes empty.
 - Settling of sand when a mixture of sand and water is left undisturbed for some time.
 - A fine beam of light entering through a small hole in a dark room illuminates the particles in its paths.
31. An element is sonorous and highly ductile. Under which category would you classify this element? What other characteristics do you expect the element to possess?
32. Give reasons
- Mitochondria is called the powerhouse of the cell.
 - Golgi body is associated with the endoplasmic reticulum.
 - Chromatin cannot be seen under the microscope
33. Describe the structure of the nucleus with a neat labeled diagram.

SECTION D

34. i) Show that the weight of an object on the moon is 1/6 the weight of an object on Earth.
 ii) State two differences between g and G. (3+2)
- OR
- i) Calculate the gravitational force between the Earth and Sun, given that the mass of the Earth = 6×10^{24} kg and of the Sun is 2×10^{30} kg. The average distance between the two is 1.5×10^{11} m.
 ii) A stone is released from the top of a tower of height 19.6m. Calculate the final velocity just before touching the ground. (3+2)

35. Discuss the various factors which affect the rate of evaporation. Latent heat of evaporation of two liquids A and B is 100 J/kg and 150 J/kg respectively. Which one can produce more cooling effect and why?

OR

Comment on the following statements:

(a) Evaporation causes cooling.

(b) Rate of evaporation of an aqueous solution decrease with increase in humidity.

(c) Sponge though compressible is a solid.

(d) Ice is solid at 0°C, while water is liquid at room temperature.

(e) Sugar crystals dissolve faster in hot water than cold water.

36. a) Draw a neat labeled diagram showing the structure of a typical plant cell .

b) State the functions of i) Ribosome ii) Cell wall

OR

a) Draw a neat, labeled diagram showing the structure of a typical animal cell.

b) State the functions of plasma membrane.

SECTION E

Read the following case base paragraph and answer the following questions.

37. The third law of motion states that when one object exerts a force on another object, the second object instantaneously exerts a force back on the first. These two forces are always equal in magnitude but opposite in direction. These forces act on different objects and never on the same object. It is important to note that even though the action and reaction forces are always equal in magnitude; these forces may not produce accelerations of equal magnitudes, this is because each force acts on a different object that may have a different mass. The two opposing forces are also known as action and reaction forces.

i) State third law of motion.

1

ii) Why is it difficult for a fireman to hold a pipe, which ejects large amounts of water.

1

iii) Even though the action and reaction forces are always equal in magnitude; these forces may not produce accelerations of equal magnitudes. Give your justification on this statement

2

OR

iii) Explain action-reaction pairs with an example.

2

38. Gases are highly compressible as compared to solids and liquids. The liquefied petroleum gas (LPG) cylinder that we get in our home for cooking or the oxygen supplied to hospitals in cylinders is compressed gas. Compressed natural gas (CNG) is used as fuel these days in vehicles. The liquid takes up the shape of the container in which they are kept. Liquids flow and change shape, so they are not rigid but can be called fluid. Solids and liquids can diffuse into liquids. The aquatic animals can breathe underwater. The rate of diffusion of liquids is greater than solid.

(i) Why Compressed natural gas (CNG) is used as fuel these days in vehicles?

- (ii) Why can the aquatic animals breathe underwater ?
- (iii) Why is the rate of diffusion of liquids is greater than solid?

OR

- (iii) Liquids have no fixed shape but have a fixed volume. Explain.

39. Most of the functional tissues in plants and animals are parenchyma tissues. The word parenchyma came from the Greek *parénkhyma*, or from "*parenkhein*", meaning "*beside*", "*to pour in*" whereas *énkhuma* means "*content of a vessel*". Parenchyma is a type of tissue consisting of cells that carry out essential functions. Parenchyma is the simple permanent ground tissues that form the bulk of the plant tissues, such as the soft part of leaves, fruit pulp, and other plant organs.

- a) What are the functions of parenchyma tissues in leaves of a plant?
- b) How does parenchyma differ from collenchyma tissue?

OR

Plants are stationary or fixed – they don't move. Since they have to be upright, they have a large quantity of supportive tissue. The supportive tissue generally has dead cells. Animals on the other hand move around in search of food, mates and shelter. They consume more energy as compared to plants. Most of the tissues they contain are living. Another difference between animals and plants is in the pattern of growth. The growth in plants are limited to certain regions, while this is not so in animals.

- a) Why is growth in plants limited to certain regions?
- b) Animals consume more energy than plants to live. Give a reason.