

NORTH-EX PUBLIC SCHOOL
(Senior Secondary, Affiliated To CBSE)
School Block, Jain Nagar, Sector-38, Rohini, Delhi – 81
HALF YEARLY EXAMINATION, 2023-24
SUBJECT – SCIENCE
CLASS - IX

TIME: 3 hrs.

MM: 80

General Instructions

- i. The question paper has five sections and 39 questions.
- ii. All questions are compulsory.
- iii. Section–A has 20 questions of 1 mark each; Section–B has 6 questions of 2 marks each; Section–C has 7 questions of 3 marks each; Section–D has 3 questions of 5 marks each and Section–E has 3 questions of 4 marks each.
- iv. There is no overall choice.

SECTION- A

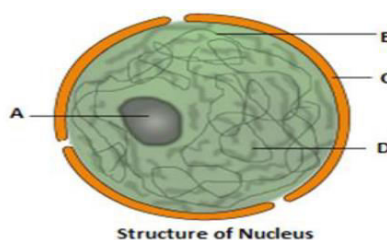
1. The shortest distance measured from the initial to the final position of an object is known as :-
 - a) it's displacement
 - b) it's distance
 - c) it's velocity
 - d) none of these
2. On the basis of chemical composition , substance can be classified as?
 - a) Element
 - b) Compound
 - c) Both a and b
 - d) None of the above
3. Sol and gel are examples of
 - a) Solid-solid colloids
 - b) Sol is a solid-liquid colloid and gel is liquid solid colloid
 - c) Sol is solid-solid colloid and gel is solid-liquid colloid
 - d) Sol is a liquid-solid colloid and gel is a solid-liquid colloid
4. A cricket player catches a ball of mass 0.1 kg, moving with a speed 10 m/s in 0.1 second. Force exerted by him is
 - a) 4
 - b) 2
 - c) 1
 - d) 10
5. Two chemical species X and Y combine together to form a product P which contains both X and Y
$$X + Y \rightarrow P$$

X and Y cannot be broken down into simpler substances by simple chemical reactions. Which of the following concerning the species X, Y and P are correct?

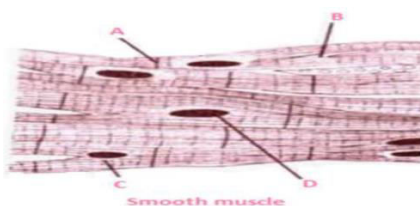
 - i. P is a compound
 - ii. X and Y are compounds
 - iii. X and Y are elements
 - iv. P has a fixed composition
 - a) (i), (ii) and (iii)
 - b) (i), (ii) and (iv)
 - c) (ii), (iii) and (iv)

d) (i), (iii) and (iv)

6. What is the name of the metal which exists in liquid state at room temperature?
- Sodium
 - Potassium
 - Mercury
 - Bromine
7. Which statement is correct about 'velocity'?
- It is a vector quantity
 - It can either be negative or positive, sometimes zero
 - When the body returns to its initial position velocity can be zero
 - All of these
8. A person met with an accident in which two long bones of the hand were dislocated. Which among the following may be the possible reason?
- Tendon break
 - Break of skeletal muscle
 - Ligament break
 - Areolar tissue break
9. The nucleus controls all the activities of the cell and acts as a site of DNA material and protein synthesis. It is composed of some components which all together give the nucleus its functionality. Here is shown a figure of nucleus with some of its components labeled as A, B, C and D. can you name these components correctly?



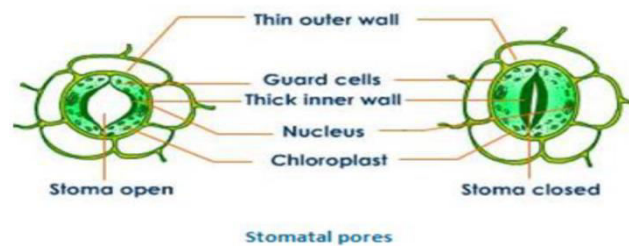
- A – Nucleons; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm
 - A – Nucleus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm
 - A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm
 - A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nuclear wall
10. If the tip of the sugarcane plant is removed from the field, even then it keeps on growing in length. It is due to the presence of:
- Cambium
 - Apical meristem
 - Lateral meristem
 - Intercalary meristem
11. In a test of biology a figure of smooth muscle labeled as A, B, C and D for different parts of the muscles. Four students P, Q, R and S in a way to attempt the question named the four parts as given below. But only one student could name all the four parts correctly



Which of the following options is the answer written by that student?

- A – Intercalated disc; B – Sarcoplasm; C – Branched fibres; D – Nucleus

- b) A – Intercalated disc; B – Branched fibres; C – Sarcoplasm; D – Nucleus
 - c) A – Branched fibres; B – Intercalated disc; C – Sarcoplasm; D – Nucleus
 - d) A – Branched fibres; B – Sarcoplasm; C – Intercalated disc; D – Nucleus
12. Swimming is possible by the:
- a) first law of motion
 - b) second law of motion
 - c) third law of motion
 - d) newtons law of gravitation
13. Tiny pores are found on the surface of the leaves of plants. These pores are called stomata. stomata surrounded by the kidney shaped guard cells provide many vital functions to the plants.



- Which of the following functions is not served by the stomata for the plants
- a) Exchange of gases, particularly CO₂ and O₂, with atmosphere
 - b) Loss of water in the form of vapours during transpiration
 - c) Helps to create pressure for the water to rise upward, by its process of transpiration
 - d) Helps the leaves to carry out the process of photosynthesis.
14. A stone is dropped from a cliff. Its speed after it has fallen 100m is (in m/s)
- a) 9.8
 - b) 44.2
 - c) 19.6
 - d) 98
15. Rahul's mother was going to make pickle. For this she cut the vegetables into small pieces and put them in the sun for few hours. Rahul was observing all her activities very curiously and asked his mother if why she had put the salted vegetables in the sun. among the following what might be the most appropriate answer for his question?
- a) So that the pickle may get extra flavour.
 - b) So that the cut vegetables may absorb the vitamin d as a nutrient from the sun rays.
 - c) So that the vegetables may lose all the water by diffusion and evaporation and become dry.
 - d) So that the salt may get evenly and properly absorbed by the vegetables.
16. A particle is moving in a circular path of radius r , after completing a round of circle. The displacement would be: -
- a) zero
 - b) $2r$
 - c) r
 - d) πr

Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R).

Answer these questions selecting the appropriate option given below:

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

17. Assertion: Displacement of an object can be zero even if the distance covered by it is not zero.
Reason: Displacement is the longest distance measured from the initial to the final position of an object.
18. 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.
19. Assertion: a solution of table salt in a glass of water is homogeneous.
Reason: a solution having different composition throughout is homogeneous.
20. Assertion: Universal gravitational constant G is a scalar quantity.
Reason: The value of G is same throughout the universe.

SECTION- B

21. Define latent heat of fusion and latent heat of vaporization. Give one usefulness of each.
22. A bus decreases its speed from 80 km/h to 60 km/h in 5 s. Find the acceleration of the bus.
23. Calculate the mass of glucose and mass of water required to make 250 g of 25% solution of glucose.
24. Why lysosomes known as scavengers of the cell?
25. Explain why some of the leaves may get detached from a tree if we vigorously shake its branch.
26. Difference between tendon and ligament with example.

SECTION- C

27. An athlete completes one round of a circular track of diameter 200 m in 40 s. What will be the distance covered and the displacement at the end of 2 minutes and 20 seconds?
28. Briefly explain the epithelial tissue and its types.
29. Distinguish among the true solution, suspension and colloidal solution in tabular form.
30. What is evaporation? How does it differ from boiling point? Explain the various factors on which evaporation depends.
31. Differentiate between various types of muscular tissues. Draw appropriate diagrams.
32. An 8000 kg engine pulls a train of 5 wagons, each of 2000 kg, along a horizontal track. If the engine exerts a force of 40000 N and the track offers a friction force of 5000 N, then calculate
 - a) The net accelerating force,
 - b) The acceleration of the train, and
 - c) The force of wagon 1 on wagon 2.
33. Write a short note on nucleus and chromosomes.

SECTION- D

34. Comment on the following statements:
 - a) Evaporation causes cooling.
 - b) Which gas is called dry Ice?
 - c) Gases are compressible but not liquids?
 - d) When you pour some acetone on your palm?
 - e) Find beam of light entering through a small hole in a dark room, illuminating the particles in its path.
35. Give reasons for the following:
 - a) We get crunchy and granular feeling when we chew pear fruit.
 - b) Branches of tree move and bend freely in high wind velocity
 - c) Epidermis has a thick waxy coating of cutin in Δ desert plants.
 - d) Presence of a chemical suberin in cork cells.
 - e) Small pores in epidermis of leaf.
36. A ball is thrown up vertically returns to the thrower after 5 s. Find
 - a) The velocity with which it was thrown up,
 - b) The maximum height it reaches, and

- c) Its position after 4 s.

SECTION- E

37. There is no atmosphere on the moon. This is because gas molecules need a certain amount of force of attraction to be retained on a heavenly body. The force of attraction of the moon is less than the required force, hence no atmosphere can exist.
- (i) The value of g on moon is times that of earth.
 - (ii) If the weight of an object is 60 kg f on earth, then its weight on moon is?
 - (iii) State Archimedes' principle.
38. The scientists now say that there are actually five states of matter A,B,C , D and E. the states A has a fixed volume but no fixed shape. The state B can be compressed very easily by applying pressure and state C has a fixed shape as well as fixed volume . the state D is the mixture of free electrons and ions where as state E is named after an Indian scientist and a famous physicist.
- a) Name the physical states A, B, C, D and E.
 - b) Name one substance belonging to state C which can directly change into vapours on heating. What is this process known as?
 - c) Name the most common substance belonging to state A.
 - d) Name one substance which normally belongs to state B but whose solid form changes directly into gaseous state.
39. Plant cells, in addition to the plasma membrane, have another rigid outer covering called the cell wall. The cell wall lies outside the plasma membrane. The plant cell wall is mainly composed of cellulose. Cellulose is a complex substance and provides structural strength to plants. When a living plant cell loses water through osmosis there is shrinkage or contraction of the contents of the cell away from the cell wall. This phenomenon is known as plasmolysis.
- (1) Which of the following is the main constituent of cell wall?
- (a) Proteins
 - (b) Lipids
 - (c) Lipoproteins
 - (d) Cellulose
- (2) Choose the correct set of statements from the following.
- Statement 1 – Cell wall lies outside the plasma membrane.
- Statement 2 – Cell wall is mainly composed of cellulose.
- Statement 3 – Cellulose is a complex substance and provides structural strength to plants.
- Statement 4 – Cell wall lies outside the plasma membrane.
- (a) Statement 1 & 3
 - (b) Statement 1 & 2
 - (c) Statement 3 & 4
 - (d) All statement are correct
- (3) What is mean by plasmolysis?
- (4) What is the reason behind structural strength of plant cell?