



# ST. MARGARET SR. SEC. SCHOOL

D-Block, Prashant Vihar, Rohini, Delhi - 110085

## ANNUAL EXAMINATION 2023-24

### SUBJECT: SCIENCE

CLASS: IX

Time: 3Hr

SAMPLE PAPER

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

- The rate of change of momentum of an object is proportional to
  - Mass of the body
  - Velocity of the body
  - Net force applied on the body
  - None of these
- What does an area velocity time graph give?
  - Distance
  - Acceleration
  - Displacement
  - None of the above
- The gravitational force between two iron balls is 4N. If the distance between the balls is reduced to half, the gravitational force between the balls will be
  - 1/2 N
  - 2N
  - 4N
  - 16N
- Find the potential energy stored in a ball of mass 5 kg placed at a height of 3 m above the ground.
  - 121.20 J
  - 147.15 J
  - 227.31 J
  - 182.21 J
- Which one of the following sets of phenomena would increase on raising the temperature?
  - Diffusion, evaporation, compression of gases
  - Evaporation, compression of gases, solubility
  - Evaporation, diffusion, expansion of gases
  - Evaporation, solubility, diffusion, compression of gases
- In which of the following the valency of each of the constituent elements is equal to the total number of atoms is one molecule of the compound?
  - HCl
  - H<sub>2</sub>S
  - CaO
  - MgCl<sub>2</sub>
- According to the following reaction  $2A + B \rightarrow A_2B$ . Which of the following statement concerning this reaction is correct?
  - The product  $A_2B$  shows the properties of substances A and B
  - The product will always have a fixed composition
  - The product so formed cannot be classified as a compound
  - The product so formed is an element
- The fine particles of an insoluble substance uniformly dispersed throughout a gas or liquid is called
  - Suspension
  - precipitate
  - colloidal solution
  - impurity

9. Which one of the following sets of phenomena would increase on raising the temperature?
- Diffusion, evaporation, compression of gases
  - Evaporation, compression of gases, solubility
  - Evaporation, diffusion, expansion of gases
  - Evaporation, solubility, diffusion, compression of gases
10. Which of the following is not correct regarding gases?
- Gases exert pressure.
  - Gases have large intermolecular spaces.
  - Gases have weak tendency to diffuse.
  - Gases have weak intermolecular forces of attraction.
11. While observing onion peel under microscope which of the following is not visible-
- Cell membrane
  - Nucleus
  - Cytoplasm
  - All of these
12. Guard cells are easily observed in-
- Epidermis
  - Cortex
  - Vascular bundle
  - Collenchyma
13. Inner surface of fallopian tubes, bronchi and bronchioles are lined by epithelial cells. Find the type of epithelia which lines them.
- Squamous epithelium
  - ciliated epithelium
  - Columnar
  - Cubical epithelium
14. The method by which insect pests are exposed to fumes of chemicals without contaminating the stored food grain is called as
- Spraying
  - dry storage
  - cold storage
  - fumigation
15. The practice of growing two or more crops simultaneously in definite rows in the same field is called as.....
- Mixed cropping
  - mixed farming
  - inter cropping
  - crop rotation
16. Which of the following is a protein containing rabi crop?
- Peas
  - Black gram
  - Green gram
  - Pigeon pea

Each question (17 -20) consists of two statements, namely Assertion (A) and Reason (R). For selecting the correct answer

- Both Assertion (A) and Reason (R) are the true and Reason (R) is a correct explanation of Assertion (A).
  - Both Assertion (A) and Reason (R) are true but Reason (R) is not a correct explanation of Assertion (A).
  - Assertion (A) is true and Reason (R) is false
  - Assertion (A) is false and Reason (R) is true.
17. Assertion: Universal gravitational constant G is a scalar quantity.  
Reason: The value of G is the same throughout the universe.
18. Assertion: When a firefly hits a bus, each of them exerts the same force.  
Reason: Firefly has more mass as compared to the windshield.
19. Assertion: Inter cropping prevents pests.  
Reason: Plant pests can be controlled biologically by their natural parasites and pathogens.
20. Assertion: Parenchyma cells help in storage of food.  
Reason: Parenchyma cells are the main seats of photosynthesis.

### SECTION B

21. i) State difference between acceleration due to gravity  
OR  
State the difference between uniform and non-uniform motion.
22. Derive an expression for potential energy.
23. Differentiate between a) Ligament and Tendon b) Areolar and Adipose tissue
24. Identify the type of tissue based on the given features-
- Contains Long narrow, thick-walled cells
  - Conduct food from leaves to the other parts
  - Thin cell wall and present in the soft part of the plants.
  - cell walls irregularly thickened at the corners

25. Distinguish between isotopes and isobars with suitable examples.
26. Classify the following into osmosis/diffusion
- Shrinking of grapes kept in thick sugar syrup.
  - Preserving pickles in salt.
  - Spreading of smell of cake being baked throughout the house.
  - Aquatic animals using oxygen dissolved in water during respiration.

### SECTION C

27. A ball is thrown upward from the surface of the moon with a velocity of 19.6m/s.
- How much time will it take to attain the maximum height?
  - How high will it go? (2+1)
28. On a 120 km track, a train travels the first 30 km at a uniform speed of 30km/h. Calculate the speed with which the train should move the rest of the track so as to get the average speed of 60km/h for the entire trip.
29. What happens to the force between two objects if the mass of one object is doubled? The distance between the object is doubled and tripled? The masses of both objects are doubled?

OR

- Name the factor on which the inertia of the body depends.
  - State Newton's second law of motion.
  - What change will force bring in a body?
30. (a) Define hybridisation  
(b) How is composite fish culture advantageous?  
(c) Why is rearing of Italian variety of bee beneficial to the farmer?
31. Write the formulae for the following compounds and calculate the molecular mass for each one of them.  
(a) Baking powder (b) Limestone
32. Name the process associated with the following
- Dry ice is kept at room temperature and at one atmospheric pressure.
  - The fragrance of lighted incense stick spreads in the room.
  - A potassium permanganate crystal is in a beaker and water is poured into the beaker with stirring.
  - Acetone bottle is left open and the bottle becomes empty.
  - Water turning into vapours at room temperature.
  - Settling of sand when a mixture of sand and water is left undisturbed for some time.
33. Provide two comparisons in between different types of skeletal muscles present in the human body.

### SECTION D

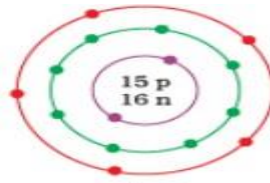
34. Two objects A and B, having mass 100 kg and 75 kg, move with velocities of 40 km/h and 6 km/h respectively. Answer the following:
- Which will have greater inertia?
  - Which will have greater momentum?
  - Which will stop first if equal negative acceleration is applied on both?
  - Which will travel a greater distance?
  - Which will impart greater impulse if collides with a wall?
35. (a) Name the process, when a drop of ink placed on the surface of water contained in a glass spread throughout the water.  
(b) Write the molecular formulae of Calcium (II) phosphate.  
(c) Write the atomic number, mass number and valency of atoms (x), (y) and (z)? Give your answer in a tabular form.



(x)



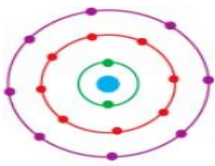
(y)



(z)

OR

- (a) What are ionic compounds? Give a suitable example.  
 (b) Give the formulae of the compounds formed from the following sets of elements.  
 (a) Calcium and fluorine  
 (b) Hydrogen and Sulphur  
 (c) Nitrogen and hydrogen  
 (e) Sodium and oxygen  
 (c) Find out the valency of the atoms represented by the figure (a) and (b).



(a)



(b)

36. Compare the plant cell and animal cell by giving only well labelled diagram.

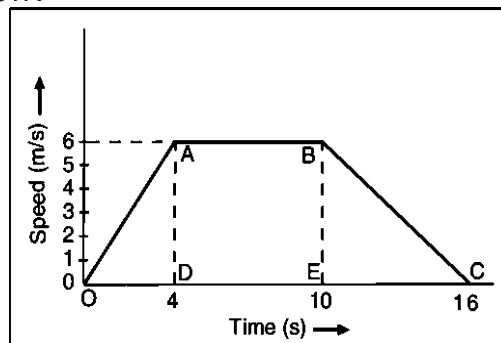
OR

Make labelled diagram of a bacterial cell, label the following parts and write their functions also-

- i- Nucleoid
- ii- flagellum
- iii- Ribosome
- iv- Cell wall
- v- cell membrane

### SECTION E

37. Read the following paragraph and answer the following based on previous knowledge.  
 Aditya started driving his car. He increases the speed for 4 seconds and then he kept his car at a constant speed for 6 seconds. Then after he decreased the speed of the car up to another 6 seconds. After reaching the starting place, he draws the speed- time graph of his 16seconds driving as shown below:



- (i) What type of motion is represented by OA?
- ii) What type of motion is represented by BC?
- (iii) Find out the acceleration of the body

OR

Calculate the retardation of the body.

38. Mitochondria are membrane-bound cell organelles (mitochondrion, singular). In bacteria it is not present as in eukaryotic cells. In bacteria it is named as mesosomes and these are infoldings in the plasma membranes. Mesosomes are analogous to the eukaryotic mitochondria and mesosomes also help in carrying out the respiration in the bacteria.

1. What is your point of view in true / false for the following statement- "Mitochondria are strange organelles in the sense that they have their own DNA and ribosomes".

2. What is the role of mitochondria in animals?

3. Expand "ATP"

4. Do viruses and fungi contain Mitochondria?

39. 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.

breathe underwater. The rate of diffusion of liquids is greater than solid.

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

2. Liquids have no fixed but have a fixed .

(a) Shape, volume (b) volume, shape (c) shape, size (d) size, shape

3. The aquatic animals can breathe underwater. Account for the statement

4. The rate of diffusion of liquids is greater than solid. Why?