# ST KABIR PUBLIC SCHOOL, SEC. 26, CHANDIGARH
## FINAL EXAMINATION (2023-24)

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|---|---|---|
| **Class- IX** | | |
| **Subject- SCIENCE (086)** | | **Duration-3 hours** |
| | | **Max. Marks – 80** |

***General Instructions:***

*i) 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.*

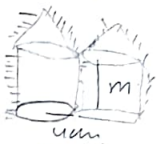
*vi) Section D consists of 3 Long Answer type questions carrying 05 marks each. Answers to these questions should be in the range of 80 to 120 words.*

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

## SECTION – A

**Select and write one most appropriate option out of the four options given for each of the questions 1 – 20**

Q.No Questions Marks




1 The inter-particle force is the strongest in 1

A. hydrogen B. water C. methyl alcohol D. sodium chloride

2 Kabir came back home after playing football. He felt hot and sweaty. He stood under the fan. He noticed he started feeling cool and dry. What explains his observation? 1

A. When sweat evaporates, warm air moves away from the body.

B. When sweat evaporates, it gains heat energy from the surroundings.

C. When sweat evaporates, it absorbs energy from the body making it cooler.

D. When sweat evaporates, cooler air from the surroundings reaches the body.

3 The zigzag movement of dispersed phase particle in a colloidal system is known as 1

A. Brownian motion B. Translational motion

C. Circular motion D. Linear motion

4 Soda water is a solution of carbon-dioxide in water. What is this solution composed of? 1

A. Liquid solute in a gaseous solvent B. Gaseous solute in a liquid solvent

C. Liquid solute in a liquid solvent D. Gas in suspended form in liquid

5 Valency of silver in $Ag_2S$ is 1

A. 1 B. 2 C. 0 D. 3

6 Which of the following statements is not true about an atom? 1

A. Atoms are not able to exist independently.

B. Atoms are the basic units from which molecules and ions are formed.

C. Atoms are always neutral in nature.

D. Atoms aggregate in large numbers to form the matter that we can see, feel or touch.

7 Which of the following electronic configurations is wrong? 1
A. Li (3) = 2, 1 B. O (3) = 2, 6 C. S (16) = 2, 6, 8 D. P (15) = 2, 8, 5

8 How many electrons, protons and neutrons will be present in $X^-$, if atomic number of X is 9 and mass number is 19? 1
A. E = 9, P = 9, N = 10 B. E = 10, P = 9, N = 10
C. E = 10, P = 10, N = 10 D. E = 9, P = 10, N = 10

9 _____ is not found in xylem tissues. 1
A. Sieve tubes B. Tracheid C. Vessels D. Xylem parenchyma

10 Roshni is making a temporary mount of onion peel. What precautions should be taken to avoid the entry of air bubbles in the slide? 1
A. Cover slip should be gently dropped over the peel
B. Peel should be immersed in strain for over an hour
C. Peel should be allowed to fold over itself once or twice
D. Cover slip should be dropped on to the peel from a certain height

11 Find out incorrect sentence 1
A. Parenchymatous tissues have intercellular spaces.
B. Collenchymatous tissues are irregularly thickened at corners.
C. Apical and intercalary meristems are permanent tissues.
D. Meristematic tissue, in its early stage, lacks vacuoles.

12 Cell wall of which one of these is not made up of cellulose? 1
A Lotus B. pitcher plant C. Cactus D. Bacteria

13 A glass cuboid has dimensions 10cm × 10 cm × 4 cm. It is kept with its perfect face (10 cm × 10 cm) in contact with the table. Later, it is lifted and allowed to rest on the table with its smaller surface (10 cm × 4 cm) in contact with the table. The pressure exerted will: 1
A. increase B. decrease C. remain same D. depend on area of table.

14 A football and a stone have the same mass. They will have 1
A. same inertia B. same momentum C. different inertia D. different momentum

15 Energy transformation in a petrol engine is 1
A. chemical to mechanical B. chemical to electrical
C. mechanical to electrical D. mechanical to chemical.

16 Which of the following is not a unit of energy? 1
A. joule B. newton meter C. kilowatt D. kilowatt hour

**Q. no 17 to 20 are Assertion - Reasoning based questions. These consist of two statements – Assertion(A) and Reason(R).**
**Answer these questions by 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-** The product of time period and frequency of a wave is unity. 1
**Reason-** Time period and frequency of a wave are inverses of each other.

18 **Assertion**- Oil starts burning in presence of fire due to a chemical change.
**Reason**-The process in which one substance reacts with another to undergo a change in chemical composition is an example of chemical change. 1

19 **Assertion:** Mitochondria and chloroplasts are semiautonomous organelles. 1
**Reason:** They are formed by division of pre-existing organelles and contain DNA but lack protein synthesizing machinery.

20 **Assertion**: cardiac muscles are a type of connective tissue. 1
**Reason:** The cells of connective tissue are loosely spaced and embedded in an intercellular matrix.

## SECTION – B

**Q. no. 21 to 26 are very short answer questions.**

21 Draw a plant cell and label the part which 2
a) packages materials coming from endoplasmic reticulum.
b) is the site for various biochemical reactions.

22 Construct a flow chart to show different types of epithelial tissue depending upon their functions. 2

23 Differentiate between the two types of fisheries depending up on the mode of obtaining fish. 2

OR

Differentiate between intercropping and mixed cropping.

24 Draw the diagram of an atom having atomic number 3 and mass number 7. 2

25 You lift a heavily packed carton of mass m in vertically upward direction through a height h. What is the work done (i) by you on the carton, and (ii) by force of gravity on the carton? 2

OR

Anil is doing a work at a rapid rate but works for only one hour. Ashok works at a somewhat slower rate, but continues to do the work for six hours. Who has greater power? Who has spent more energy?

26 Why does a block of wood held under water rise to the surface when released? 2

## SECTION - C

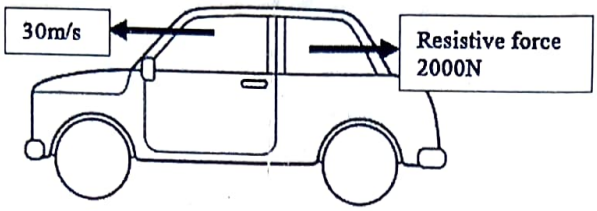
**Q.no. 27 to 33 are short answer questions.**

27 Ravi is driving motorbike A at 36 km/h. He applies brakes and stops the motorbike in 10s. Shyam is driving motorbike B at 18km/h. He also applies brakes and stops his bike in 20s. 3

Represent the motion of the two motorbikes on a speed-time graph.
Which of the two motorbikes travelled farther before it came to a stop?

28 Calculate the gravitational force of attraction between two metal spheres each of mass 90 kg, if the distance between their centers is 30 cm. Given $G = 6.67 \times 10^{-11}$ N $m^2/kg^2$. 3
Will the force of attraction be different if the same bodies are taken on the moon, their distance of separation remaining the same?

29 A car of mass 900 kg is travelling at a steady speed of 30 m/s against a resistive force of 2000 N, as illustrated in figure. 3




a) Calculate the kinetic energy of the car.
b) Calculate the energy used in 1.0 s against the resistive force.
c) What is the minimum power that the car engine has to deliver to the wheels?

30 Observe the melting and boiling point of substance A, B and C given in the following table: 3

| Substance | Melting point ($^0$C) | Boiling point ($^0$C) |
|---|---|---|
| A | -210 | -196 |
| B | 250 | 700 |
| C | -20 | 90 |

a) State the physical state of substances A, B and C at room temperature (30 $^0$C).
b) Name the substance which will have more compressibility in the given table, and why?

31 80 mL of solution contains 20 g of solute. Calculate the concentration in terms of mass by volume percentage of the solution. 3
What would you observe when a saturated solution of potassium chloride prepared at 60°C is allowed to cool at room temperature?

**OR**

a) Distinguish between colloid and suspension on the basis of (i) Stability and (ii) Filterability.
b) Under which category of mixtures would you classify alloys and why?

32 A solution of 3% glucose and a solution of 8% glucose are kept in a trough separated by a semi permeable membrane. What will you observe after 1 hour? 3
Support your answer with a diagram.

33 These are varieties of poultry birds: A and B are Aseel and Basra, C and D are White Leg horn and Rod Island red. Which are indigenous and which are exotic? 3
What would you obtain if indigenous species is bred with exotic?
What would be the advantages of this process?

## SECTION – D
**Q.no. 34 to 36 are Long answer questions.**

34 How do good animal husbandry practices benefit farmers? 5

OR

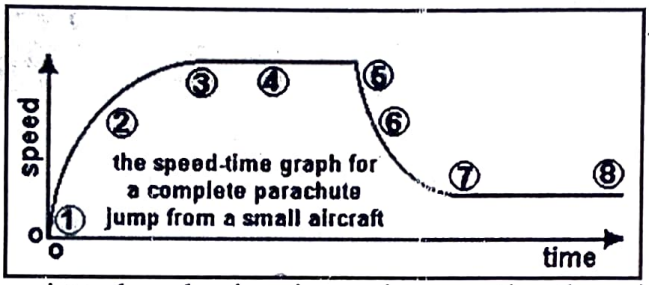
Define composite fish culture. State the advantage of this system by giving suitable examples.
What is the major problem in composite fish farming?
How is this problem overcome?

35 a) Calculate the formula unit mass of NaCl and $CaCl_2$. 5
(Na = 23, Cl = 35.5, Ca = 40)
b) The atomic mass of an element is in fractions. What does it mean?
c) Give any two drawbacks of Dalton's atomic theory.

OR

a) Write the chemical formulae for the following :
(i) Calcium sulphide, (ii)Magnesium hydroxide, (iii) Sodium sulphate,
(iv) Iron (III) chloride (v)Zinc carbonate (vi) Potassium oxide
b) When 5g calcium is burnt in 2 g of oxygen ,7g of calcium oxide is obtained .When 5 g of calcium is burnt in 20 g of oxygen ,then also 7g of calcium oxide is obtained .Why does this happen ? State the law of chemical combination which is applicable here.

36 A parachutist jumps from an aircraft. After some time, he opens his parachute. The speed-time graph for his motion is shown below. Observe the following graph and answer the questions that follow: 5




a) Identify two points where the air resistance is greater than the weight of the body?
b) Does parachute fall freely? Justify your choice.
c) What is the acceleration of the free fall?
d) Due to constantly increasing drag the parachute's strings break at a height of 19.6 m above the ground and the parachutist is falling freely now. Calculate the final velocity of the parachutist just before hitting the ground. ($g=9.8\ m/s^2$)

OR

a) The mass of a goods lorry is 4000 kg and the mass of goods loaded on it is 20000 kg. If the lorry is moving with a velocity of 2m/s what will be its momentum? How much force would be required if the lorry was to move at 5m/s for 10 minutes?
b) Athletes in high jump event fall on a cushioned surface and not on the floor. Why?

## SECTION - E

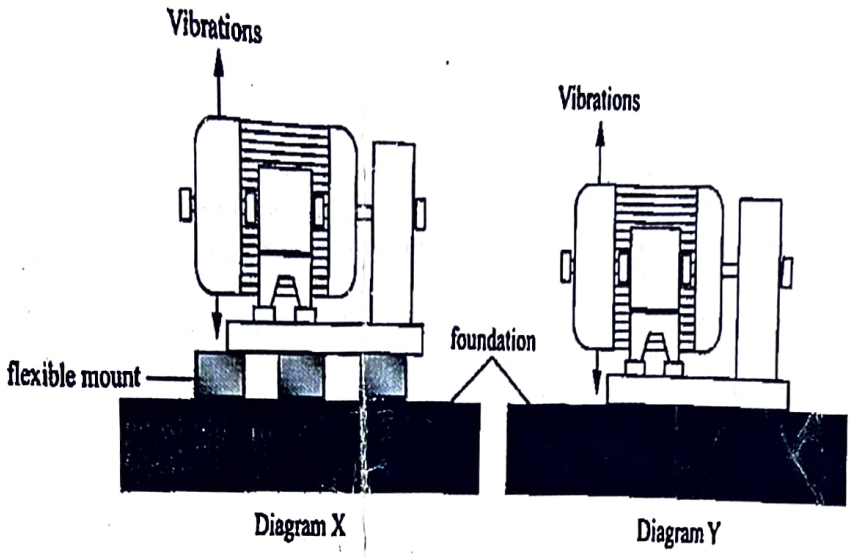
**Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.**

37 Manik saw his father watering his garden plants in hot weather. He noticed that water doesn't stick to the plant leaves and leaves become dry but looked fresh. He asked following questions to his teacher. 4
a) Why does water not stick to the leaves? What is the role of this layer?
b) Which tissue forms the outer covering of a plant and does it have a protective role to play? How?

OR

b) It there any other dead protective tissue covering the plant. Differentiate between the two protective tissues.

38 Amplitude is the size of vibrations and is measured in m. The greater the amplitude, louder is the sound produced. In factories, noise from machines can be a health hazard to the workers. Diagram X shows a sewing machine with flexible mounts between the machine and its foundation while diagram Y shows the same machine firmly mounted on the foundation. 4




a) Suggest one way in which workers can protect their ears from the noise.
b) What would happen if a rubber mat is placed between the machine and the foundation in diagram Y?
c) Explain which machine would produce a softer noise.

OR

c) On which factor does the quality of sound depend? Can two musical instruments have the same quality of sound?

39 In nature ,a number of atoms of some elements have been identified ,which have the same atomic number but different mass numbers .For e.g., take the case of hydrogen atom ,it has three atomic species namely Protium $\frac{1}{1}H$ , Deuterium $\frac{2}{1}H$ and Tritium $\frac{3}{1}H$ .The atomic number of each is 1, but the mass no. is 1,2,3 respectively. Other such examples are carbon $\frac{12}{6}C$, $\frac{13}{6}C$ and $\frac{14}{6}C$. On the basis of these examples, isotopes can be defined as the atoms of the same element, having the same atomic number and different mass numbers. Many elements consist of a mixture of isotopes. Each isotope of an element is a pure substance. The chemical properties of isotopes are similar but their physical properties are different. 4

Based on the above information, answer the following questions -
a) Name the subatomic particle which differs in isotopes of the same element.
b) Give two applications of radioisotopes.
c) The chemical properties of isotopes are similar but their physical properties are different. Justify this statement.

**OR**

c) Naturally occurring Boron consist of two isotopes with atomic masses 10 and 11. The average atomic mass of natural Boron is 10.80. Calculate the percentage of each isotope in natural Boron.