

Rudra the Practical School

Annual Examination 2023-24



Name : _____

Std: 9th CBSE

Sub:- _____

Date: _____

TERM EXAMINATION 2023 - 2024

Subject: Science

Grade:- IX

Total Marks: 80

Name:- _____

Roll No:- _____

Time:-3hrs.

Date:- / /2024

General Instructions:

1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective type questions carrying 1 mark each.
4. 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.
5. 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.
6. Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
7. Section E consists of 3 source - based/case - based units of assessment of 04 marks each with sub - parts.

SECTION A

1. An element P forms an oxide with formula PO . The formulae of its sulphate and phosphate will be respectively [1]
 - a) $P_2(SO_4)_3$ and PPO_4
 - b) PSO_4 and $P_2(PO_4)_3$
 - c) $P(SO_4)_2$ and $P(PO_4)_2$
 - d) PSO_4 and $P_3(PO_4)_2$
2. Two samples X and Y of a pure substance obtained by two different methods contain elements P and Q. Substance X has a mass of 2.25 g and contains 0.90 g of Q. Substance Y is made up of 60% P and 40% Q by weight. This is an illustration of [1]
 - a) Law of conservation of mass
 - b) Law of multiple proportions

- c) None of these
d) Law of constant proportions
- 3 Rutherford's alpha - particle scattering experiment was responsible for the discovery of : [1]
a) Atomic nucleus b) Proton c) Electron d) Neutron
- 4 Isotopes of an element have : [1]
1. Same chemical properties 2. Same atomic masses
3. Different atomic numbers 4. Atoms of the same element
a) All of these b) (a) and (d) are correct
c) (b) and (c) are correct d) (a), (b) and (c) are correct
- 5 Which of the following statements does not belong to Bohr's model? [1]
a) Electrons revolve around the nucleus in different orbits having fixed energies.
b) The electrons radiate energy during revolution due to force of attraction between nucleus and electrons.
c) The electron in the orbit nearest to the nucleus is in lowest energy state and farthest away from nucleus is in highest energy state.
d) Energy of the electrons in the orbit is quantized, i.e., they have fixed energies.
- 6 Organelle other than nucleus, containing DNA is [1]
a) Endoplasmic reticulum b) Golgi apparatus
c) Mitochondria d) Lysosome
- 7 Which of the following cell functions will stop, if its ribosomes are destroyed? [1]
a) Formation of complex sugars b) Lipid metabolism
c) Protein synthesis d) ATP synthesis
- 8 Lysosomes are formed by: [1]
a) SER b) Golgi apparatus c) Plasma membrane d) RER
- 9 A person met with an accident in which two long bones of hand were dislocated. Which among the following may be the possible reason? [1]
a) Areolar tissue break b) Tendon break
c) Break of skeletal muscle d) Ligament break

10 Which cell does not have perforated cell wall? [1]

- a) Companion cells b) Vessels c) Tracheids d) Sieve tubes

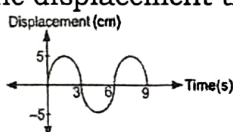
11 Which of the following sets includes simple permanent tissues? [1]

- a) Collenchyma, parenchyma, Sclerenchyma
b) Phloem, xylem, collenchyma
c) Sclerenchyma, phloem, collenchyma
d) Parenchyma, phloem, sclerenchyma

12 Wave motion transfers [1]

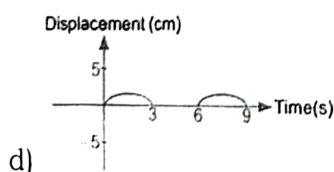
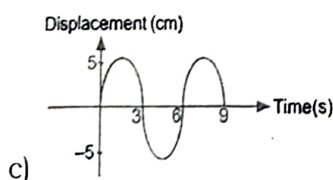
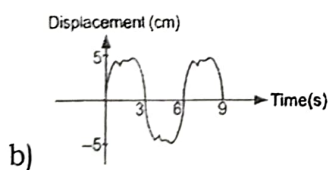
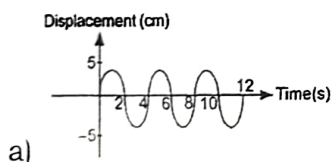
- a) mass b) velocity c) energy d) momentum

13 The following figure shows the displacement time graph for a sound wave [1]



produced by an instrument.

Which graph can be obtained when another musical instrument produces a note of the same pitch but of a different quality?



14 Reflection of sound obeys the law [1]

- a) $\angle i = 2 \angle r$ b) $\angle i = \angle r$ c) $\angle i < \angle r$ d) $\angle i > \angle r$
- 15 Sound travels with a speed of about 330 m s^{-1} . What is the wavelength of sound whose frequency is 660 Hz ? [1]
 a) 500 m b) 5 m c) 0.5 d) 50 m
- 16 The penetrating power of ultrasonic waves and other audible sounds are given as f_1 and f_2 respectively. Then [1]
 a) $f_1 > f_2$ b) $f_1 = 2f_2$ c) $f_1 < f_2$ d) $f_1 = f_2$
- 17 **Assertion (A):** Isotopes of an element show different valencies. **Reason (R):** Isotopes have different atomic numbers. [1]
 a) Both A and R are true and R is the correct explanation of A.
 b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false.
 d) A is false but R is true.
- 18 **Assertion (A):** A plant cell bursts if placed in water. **Reason (R):** High turgor pressure causes bursting of plant cells. [1]
 a) Both A and R are true and R is the correct explanation of A.
 b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false.
 d) A is false but R is true.
- 19 **Assertion (A):** The inner lining of the intestine has tall epithelial cells. **Reason (R):** Columnar epithelium facilitates absorption and secretion. [1]
 a) Both A and R are true and R is the correct explanation of A.
 b) Both A and R are true but R is not the correct explanation of A.
 c) A is true but R is false.
 d) A is false but R is true.
- 20 **Assertion (A):** The speed of sound in solids is maximum though their density is large. **Reason (R):** The coefficient of elasticity of solid is large. [1]
 a) Both A and R are true and R is the correct explanation of A.
 b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

SECTION B

21 State the Postulates of Dalton Theory.

22 Define the terms: -

1. Atomic number

2. Mass number

[2]

[2]

23 Draw a neat and labelled diagram of mitochondria.

24 Name the following: -

1. Tissue that stores fats in our body

[2]

2. Tissue present in the brain

[2]

3. Connective tissue with fluid matrix

4. Tissue that connects muscles to bones in humans

25 A source of wave produces 40 crests and 40 troughs in 0.4 second. Find the frequency of the wave.

[2]

26 A Sonar emits pulses on the surface of water which are detected after reflection from the bottom. If the time interval between the emission and detection of the pulse is 2 s find the depth of water. Take velocity of sound in water as 1531 ms^{-1} .

[2]

SECTION C

27 Write down the names of compounds represented by following formulae:

1. $\text{Al}_2(\text{SO}_4)_3$

2. CaCl_2

3. K_2SO_4

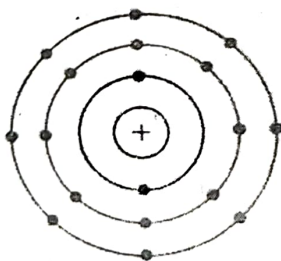
4. KNO_3

5. CaCO_3

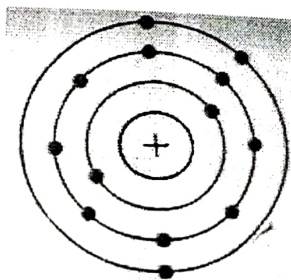
[3]

28 Find out the valency of atoms represented by the following figures.

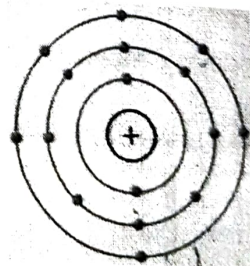
[3]



A



B



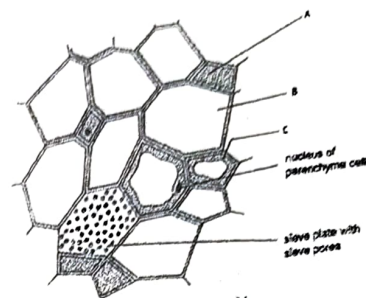
C

29 Write main differences between plant cell and animal cell.

[3]

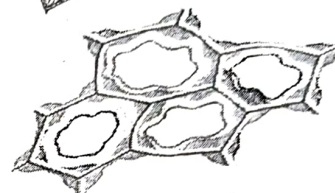
30 Study the following diagram of phloem and answer the following questions:

1. Identify A and B in the given diagram.
2. What is the function performed by B?
3. What is the function performed by C?



[3]

- 31 1. Identify the tissue given in the following figure.
2. Specify the function of this tissue.
3. Name any one part of the plant, where these cells are present.



[3]

[3]

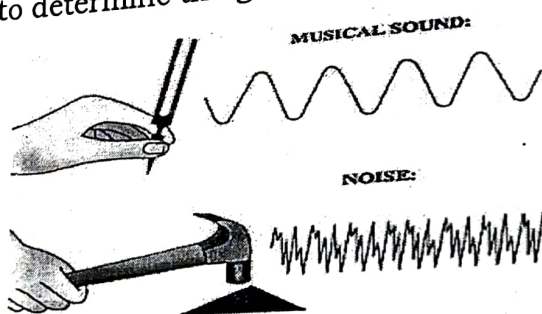
32 Reena's grandmother took her mother to a doctor as she was four months pregnant for ultrasonography. But she showed her interest in determining whether the child is a boy or a girl. The doctor was annoyed and refused to disclose the gender of the child.

1. What is ultrasonography?
2. On what principle does it work?
3. Why do you think the doctor refused to determine the gender of the child?

[3]

33 Observe the following diagram and answer the following questions:

1. What is the difference between longitudinal and transverse wave?
2. Mention the three characteristics of sound.
3. What is the crest and trough?



SECTION D

34 **Read the passage and answer any four questions:** In nature, a number of atoms of some elements have been identified, which have the same atomic number but different mass numbers. Many elements consist of a mixture of isotopes. Each isotope of an element is a pure substance. Chlorine occurs in nature in two isotopic forms. While hydrogen occurs in three isotopic forms. Isotopes have various applications such as an isotope of uranium is used as a fuel in nuclear reactors. The mass of an atom of any natural element is taken as the average mass of all the naturally occurring atoms of that element. Atoms of different elements with different atomic numbers, which have the same mass number, are known as isobars.

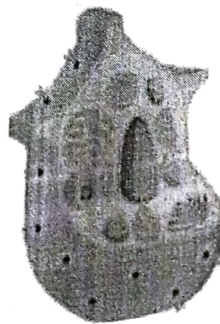
[4]

1. An isotope of cobalt is used in the
 - a. treatment of cancer
 - b. treatment of goitre
 - c. as a fuel
 - d. none of these
2. The isotope deuterium of hydrogen has
 - a. No neutrons and one proton
 - b. One neutron and two protons
 - c. One electron and two neutrons
 - d. One proton and one neutron
3. Which of the following reason correctly justifies: The identical chemical properties of all the isotopes of an element.
 - a. Isotopes have different atomic number
 - b. Isotopes have the identical electronic configuration
 - c. Isotopes have the different electronic configuration
 - d. Isotopes have identical proton
4. There are two atomic species X and Y, such that (X: proton - 8, neutron - 8; Y: proton - 8, neutron - 10) Which of the following statements is true about X and Y?
 - a. X and Y are isobars
 - b. X and Y have different chemical properties
 - c. X and Y have different physical properties
 - d. All of these
5. Hydrogen exists in three isotopic forms, ${}_1\text{H}^1$, ${}_1\text{H}^2$, ${}_1\text{H}^3$ known as protium, deuterium and tritium. Why are all the isotopes neutral in nature?
 - a. Since neutrons are neutral in nature hence isotopes are electrically neutral.
 - b. All the isotopes have one electron and one proton, hence they are neutral.
 - c. All the isotopes have one proton and one neutron, hence they are neutral.
 - d. Increasing the number of protons in the isotopes make them neutral.

35 Read the passage and answer any four questions:

The plasma membrane is the outermost covering of the cell that separates the contents of the cell from its external environment. The plasma membrane allows or permits the entry and exit of some materials in and out of the cell through osmosis and diffusion. Osmosis is the passage of water from a region of high water concentration through a selectively permeable membrane to a region of low water concentration till equilibrium is reached. If the medium has exactly the same water concentration as the cell, there will be no net movement of water across the cell membrane. Osmosis is a special case of diffusion through a selectively permeable membrane. Diffusion is important in the exchange of gases and water in the life of a cell. In addition to this, the cell also obtains nutrition from its environment.

ANIMAL VS PLANT CELLS



Plant Cell



Animal Cell

1. In diffusion, there is a spontaneous movement of a substance from a region of _____ concentration to a region where its concentration is _____.
 a. high, low b. low, high c. high, high d. low, low

2. The plasma membrane is flexible and is made up of
 a. Protein b. lipids c. fat d. carbohydrates

Choose the correct option

- a. (I) and (II) b. (II) and (III) c. (III) and (IV) d. (IV) and (I)

3. Unicellular freshwater organisms and most plant cells tend to gain water through

- a. Osmosis b. diffusion c. absorption d. none of these

4. The cell will shrink in which of the following solution?

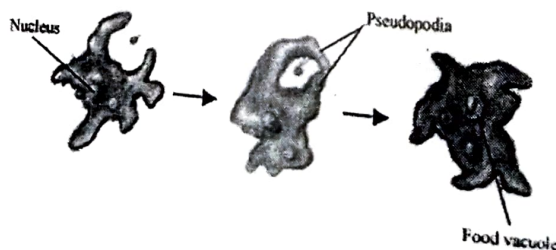
- a. Hypotonic solution b. Hypertonic solution

- b. isotonic solution

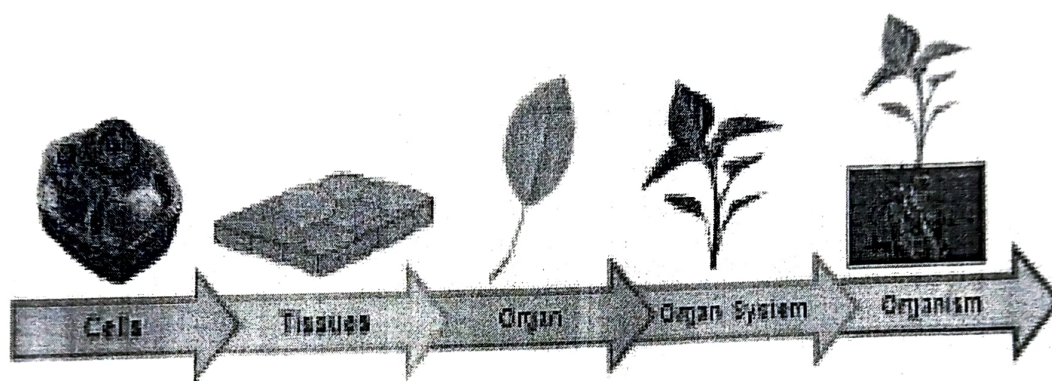
- c. none of these

5. Amoeba acquire its food through the process of

- a. Endocytosis b. exocytosis
- c. both (a) and (b) d. none of these



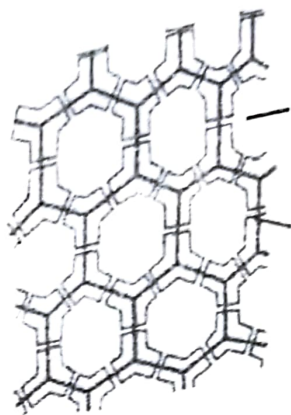
- 36 **Read the passage and answer any four questions:** A few layers of cells beneath the epidermis are generally simple permanent tissue. Parenchyma is the most common simple permanent tissue. It consists of relatively unspecialized cells with thin cell walls. They are living cells. Collenchyma allows bending of various parts of the plant - like tendrils and stems of climbers without breaking. Sclerenchyma tissue makes the plant hard and stiff. We have seen the husk of a coconut. It is made of sclerenchymatous tissue. They are long and narrow as the walls are thickened due to lignin. The tissue is present in stems, around vascular bundles, in the veins of leaves and in the hard covering of seeds and nuts. [4]



- The flexibility in plants is due to
 - Collenchymas
 - parenchyma
 - chlorenchyma
 - aerrenchyma
- Function of aerrenchyma:
 - It performs photosynthesis
 - It helps the aquatic plant to float
 - It provides mechanical support
 - none of these
- Which of the following tissues has dead cells?
 - Parenchyma
 - Sclerenchyma
 - Collenchyma
 - Epithelial tissue
- Which of the following statement is incorrect
 - Parenchyma tissues have intercellular spaces.
 - Collenchymatous tissues are irregularly thickened at corners.
 - Apical and intercalary meristems are permanent tissues.
 - Meristematic tissues, in its early stage, lack vacuoles, muscles
 - (I) and (II)
 - (II) and (III)
 - (III) and (I)
 - Only (III)

5. Which of the following is the function of the tissue which is shown in the below diagram?

- Transpiration
- Provides mechanical support
- Provides strength to the plant parts
- None of these



[5]

SECTION E

- 37 Write the molecular formulae for the following compounds: (ANY FIVE)

- Copper (II) bromide
- Aluminium (III) nitrate
- Calcium (II) phosphate
- Iron (III) sulphide
- Mercury (II) chloride
- Magnesium (II) acetate

[5]

- 38 Draw a plant cell and label the parts which

- determines the function and development of the cell
- packages materials coming from the endoplasmic reticulum
- provides resistance to microbes to withstand hypotonic external media without bursting
- is site for many biochemical reactions necessary to sustain life.
- is a fluid contained inside the nucleus

- 39
- Write two difference between echo and reverberation?
 - How can we reduce reverberation in an auditorium or a big hall?
 - Which materials are good absorbers of sound?
 - Why we can hear more clearly in a room having curtains?

[5]