 **SINDHI HIGH SCHOOL, BENGALURU.**

**ANNUAL EXAMINATION (2023-24)**

**SUBJECT: SCIENCE**

**CLASS: IX MAX MARKS: 80**

**DATE: 12/2/2024 Reading Time: 8:30 to 8:45 am**

**NO OF PRINTED SIDES: 8 Writing Time: 8:45 to 11:45 am**

**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.

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

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| **S NO.** | **QUESTIONS** | MARKS |
|  | **SECTION A** |  |
|  | **Select and write the most appropriate option out of the four options given for each of the questions 1 – 20.** |  |
| 1 | Ram heats a beaker containing ice and water. He measures the temperature of the content of the beaker as a function of time. Which of the following would correctly represent the result?  a) III b) IV c) I d) II | 1 |
| 2 | Which of the following are physical changes?  i. Melting of iron metal ii. Rusting of iron  iii. Bending of an iron rod iv. Drawing a wire of iron metal  (a) i, ii and iii (b) i, ii and iv (c) i, iii and iv (d) ii, iii and iv | 1 |
| 3 | How many electrons are present in the species Mg**2+** ion?  a) 2 b) 8 c) 4 d) 0 | 1 |
| 4 | 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. | 1 |
| 5 | Match column A with column B.   |  |  | | --- | --- | | Column A (Atomic number) | Column B (Valency) | | (A) 12 | (i) 3 | | (B) 17 | (ii) 0 | | (C) 10 | (iii) 2 | | (D) 15 | (iv) 1 |   (a) A → ii, B → iv, C → iii, D → i (b) A → iii, B → iv, C → ii, D → i  (c) A → iii, B → iv, C → i, D → ii (d) A → iii, B → ii, C → i, D → iv | 1 |
| 6 | Which one of the following will result in the formation of a mixture?  (a) Breaking ice cubes into small pieces  (b) Adding sodium metal to water  (c) Agitating a detergent with water in a washing machine  (d) Crushing a marble tile into small particles | 1 |
| 7 | The formula of Ammonium Sulphate is —————–  (a) NH4SO4 (b) NH4SO2 (c) (NH4)2SO4 (d) NH2SO4 | 1 |
| 8 | In the given picture identify the part with which the chlorophyll is associated with  Prokaryotic Cells Images – Browse 4,600 Stock Photos, Vectors, and Video |  Adobe Stock  (a) Chloroplast (b) membranous vesicles (c) cytoplasm (d) nucleoid | 1 |
| 9 | Sania experiments to know how plant cells lose or gain water through osmosis. She cuts out 5 cm long potato strips. She puts three potato strips in each of the following beakers:   • Beaker 1 containing only water  .• Beaker 2 containing 1% salt solution   • Beaker 3 containing 2% salt solution  Sania leaves the potato strips in the beaker for 5 hours.    She records the length of the potato strips in each beaker after 5 hours.  What can Sania conclude from her experiment?  (a) Cells gain water through osmosis when kept in a salt solution.  (b) Salt molecules from the cell move out when kept in water.  (c) Cells in salt solution first gain water and then gradually lose water.  (d) Water molecules move out of the cell based on the amount of salt in the solution. | 1 |
| 10 | The diagram shows an animal cell with some of its organelles. X is also a cell organelle.    What does X represent in the diagram?  (a) Golgi apparatus  (b) Chromosomes  (c) Endoplasmic reticulum  (d) Nucleus | 1 |
| 11 | Which of these properties qualifies amoeba as eukaryotes?  (a) It is unicellular.  (b) It needs food for energy.  (c) It has a membrane-bound nucleus. (d) It has DNA as its genetic material. | 1 |
| 12 | The diagram shows the crop harvesting pattern followed by a farmer. Bed 1, Bed 2 and Bed 3 are different parts of the farm.    What is the common term used for this pattern of crop harvesting?  (a) Crop rotation    (b) Mixed cropping  (c) Intercropping                         (d) Organic farming | 1 |
| 13 | A car travels 10 m in 5 seconds, 20 m in the next 10 seconds, and 30 m in the last 10 seconds. The average speed of the motion is:  (a) 30 ms-1 (b) 2.2 ms-1 (c) 2.4 ms-1 (d) 2.0 ms-1 | 1 |
| 14 | A car accelerates uniformly from 18 km/h to 36 km/h in 5 sec. The acceleration is  (a) 5 ms-1 (b) 1 ms-2 (c) 1 km/s2  (d) 216 ms-2 | 1 |
| 15 | Intestine absorbs the digested food materials. What type of epithelial cells are responsible for that?  (a) Stratified squamous epithelium (b) Columnar epithelium  (c) Spindle fibres (d) Cuboidal epithelium | 1 |
| 16 | Manure is organic matter used to enrich the soil with nutrients and also improves the physical structure of the soil. Following are some statements regarding the composition or effects of using manure. Find out the correct sentence about manure.  i. Manure contains large quantities of organic matter and small quantities of nutrients  ii. It increases the water-holding capacity of sandy soil  iii. It helps in draining out the excess of water from clayey soil  iv. Its excessive use pollutes the environment because it is made of animal excretory waste  (a) i and ii (b) i and iv (c) ii and iii (d) iii and iv | 1 |
|  | **Note: In the following questions 4 to 6, a statement of Assertion is followed by a statement of Reasoning. Choose the correct answer from the following options.**  **(a) Both assertion and reason are correct statements, and reason is the correct explanation for assertion.**  **(b) Both assertion and reason are correct statements but reason is not the correct explanation for assertion.**  **(c) Assertion is correct, but reason is the wrong statement.**  **(d) Assertion is wrong, but reason is the correct statement.** |  |
| 17 | Assertion (A): Naphthalene balls disappear with time without leaving any residue. Reason (R): Naphthalene ball gets converted into vapours due to evaporation. | 1 |
| 18 | Assertion (A): Some cells like amoeba have changing shapes.  Reason (R): Unicellular organisms show cell shape-changing features**.** | 1 |
| 19 | |  | | --- | | Assertion (A): Areolar tissue supports internal organs and helps in tissue repair. | | Reason (R): Areolar tissue is a widely distributed tissue in the body of adults. | | 1 |
| 20 | Assertion (A): The speed or velocity of a car running on a crowded city road changes continuously.  Reason (R): The movement of a car on a crowded city road is an example of non-uniform acceleration. | 1 |
|  | **Section B** |  |
| 21 | (a) Define atomicity.  [ (b) Write the atomicity of the following: (i) Sulphur (ii) Phosphorus | 2 |
| 22 | Which kind of plastid is more common in  (a) roots of the plant (b) leaves of the plant  (c) flower of the plant (d) leaf buds of the plant | 2 |
| 23 | How do insect pests attack the plant and affect it? | 2 |
| 24 | Explain why it is difficult to push a tin can into water keeping its mouth upwards than when its mouth is kept downwards towards the water? | 2 |
| 25 | A battery lights a bulb. Describe the energy changes involved in the process.  **OR**  (a) Define 1 J of work.  (b) When do we say that work is done? | 2 |
| 26 | Why is the epidermis important for plants?  (Any 4 points) | 2 |
|  | **Section C** |  |
| 27 | (a) In a reaction, 5.3 g of sodium carbonate reacted with 6 g of acetic acid. The products were 2.2 g of carbon dioxide, 0.9 g of water and 8.2 g of sodium acetate. Show that these observations are in agreement with the law of conservation of mass.  sodium carbonate + acetic acid → sodium acetate + carbon dioxide + water  (b) Calculate the molecular mass of **C2H6**. | 3 |
| 28 | (a) What would you observe when a saturated potassium chloride solution at 60 degrees Celsius is allowed to cool down to room temperature?  (b) Why is a mixture called an impure substance?  (c) What are alloys?  **OR**  (a) Calculate the mass of glucose and the mass of water required to make **200g** of **25%** solution of glucose.  (b) A sample of water under study was found to boil at **102° C** at normal pressure. Is water pure? Will this water freeze at **0° C**? Comment. | 3 |
| 29 | Give reasons.  (a) Meristematic cells have a prominent nucleus and dense cytoplasm but they lack vacuole.  (b) We get a crunchy and granular feeling when we chew pear fruit.  (c) Branches of a tree move and bend freely in high wind velocity. | 3 |
| 30 | The kinetic energy of an object of mass m moving with a velocity of **5 ms-1** is **25 J**. What will be its kinetic energy when its velocity is doubled? What will be its kinetic energy when its velocity is increased to three times? | 3 |
| 31 | Prove the law of conservation of energy in case of a freely falling body? | 3 |
| 32 | (a) A steel needle sinks in water but a steel ship floats. Explain how.  (b) Why do you prefer a broad and thick handle for your suitcase? | 3 |
| 33 | (a) What type of cell division takes place in the following:  (i) Replacement of damaged tissues.   (ii) Healing of the wound.  (iii) Development of embryo from zygote (iv) Formation of gametes  (b) Comment on the statement – Meiosis enables the conservation of specific chromosome numbers of each species even though the process results in a reduction of chromosome number. | 3 |
|  | **Section D** |  |
| 34 | (a) Why did Rutherford select a gold foil in his α–ray scattering experiment?  (b) Find out the valency of the atoms represented by Fig. (a) and (b).    (c) Helium atom has 2 electrons in its valence shell but its valency is not 2, Explain.  (d) Which of the following pairs are isotopes? Why?  (i)  (ii)    **OR**  (a) Enlist the conclusions drawn by Rutherford from his α-ray scattering experiment.  (b) Give two important applications of radioactive isotopes.  [[ | 5 |
| 35 | (a) Name the kinds of muscles found in your limbs and lungs. How do they differ from each other structurally and functionally?  (b) Draw a neat labelled diagram of a neuron.    **OR**  (a) (i) Identify the given diagram.  (ii) Label the parts A, B, and C  (iii) How do Part C and Part D differ in  function?  (b) Draw a neat labelled diagram of any two  simple permanent tissues. | 5 |
| 36 | (a) What is meant by the frequency of sound waves?  (b) Give the range of frequencies of sound waves that an average human ear can detect.  (c ) A source of wave produces **20** crests and 20 troughs in **0.2 s**.  The distance between a crest and the next trough is **50 cm**. Find the  (i) wavelength (ii) frequency (iii) time period of the wave.  **OR** (a) Draw distance-time graph for a stationary object and object in non-uniform motion. (b)From a cliff of **49 m** high, a man drops a stone. One second later, he throws another stone. They both hit the ground at the same time. Find out the speed with which he threw the second stone. | 5 |
|  | **Section E** |  |
| 37 | **100 ml** of water was placed in four vessels **A, B, C, and D**. Vessels **C, A** and **D** are of the same size, **B** is smaller. Vessel **C** is covered and **C** and **D** are placed under the fan as shown:  Read the above information and answer the following questions.  (a) In how many beakers, will water escape into the atmosphere as vapours?  (b) After one hour from the beginning of the experiment, the water level will fall to the minimum in which beaker?  (i) C ; (ii) A ; (iii) D ; (iv) Both in A and D  (c) A balloon, when kept in the sun, bursts after some time. Why?  **OR**  (c) Why do we feel pleasant on a hot sunny day, while sitting under a tree? | 4 |
| 38 | Large numbers of Bhetki fish died and got crushed in the turbines of hydroelectric power stations while they migrated from river to sea. The environmentalists gave the power plant the solution to this problem. Now all Bhetki fish are removed with the help of a special technique and hence do not enter the turbines to crush and die.  (a) As marine fish stock gets depleted, how can the demand for more fish be met?  (b) What are the two advantages of a composite fish culture system?  (c) Name two different varieties of marine fish.  **OR**  (c) What is aquaculture? | 4 |
| 39 | Acoustic waves are reflected by walls or other hard surfaces, such as mountains and privacy fences. The reason of reflection may be explained as a discontinuity in the [propagation](https://en.wikipedia.org/wiki/Wave_propagation) [medium](https://en.wikipedia.org/wiki/Transmission_medium). This can be heard when the reflection returns with sufficient magnitude and [delay](https://en.wikipedia.org/wiki/Delay_(audio_effect)) to be perceived distinctly. When sound, or the echo itself, is reflected multiple times from multiple surfaces, the echo is characterized as a reverberation.  (a) State laws of reflection.  (b) What are the conditions for an echo to be heard?  (c) Write any two uses of ultrasound.  OR  Write any two uses of multiple reflections. | 4 |

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