

O. P. JINDAL SCHOOL, SAVITRI NAGAR
ANNUAL EXAMINATION (2022 – 2023)

Class: IX
Subject: Science

MM: 80
Time: 3 Hrs.

(Fifteen minutes extra will be given for reading the question paper.)

General Instructions:

- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- 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.
- 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
- 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.
- Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section A

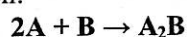
Q1. Sound waves can not pass through

- | | |
|-----------|------------|
| (a) solid | (b) liquid |
| (c) gas | (d) vacuum |

Q2. Area under the velocity - time graph gives.

- | | |
|--|--|
| (a) The time taken by a moving object | (b) The distance travelled by a moving object. |
| (c) The acceleration of a moving object. | (d) None of the above. |

Q3. Two substances, A and B were made to react to form a third substance, A_2B according to the following reaction:



Which of the following statements concerning this reaction are **incorrect**?

- (i) The product A_2B shows the properties of substances A and B.
- (ii) The product will always have a fixed composition.
- (iii) The product so formed cannot be classified as a compound.
- (iv) The product so formed is an element.

- | | |
|-------------------------|--------------------------|
| (a) (i), (ii) and (iii) | (b) (ii), (iii) and (iv) |
| (c) (i), (iii) and (iv) | (d) (iii) and (iv) |

Q4. Rate of evaporation increases with

- | | |
|-------------------------------|-------------------------------|
| (a) Increases surface tension | (b) Decreases surface tension |
| (c) Increases humidity | (d) An increase in wind speed |

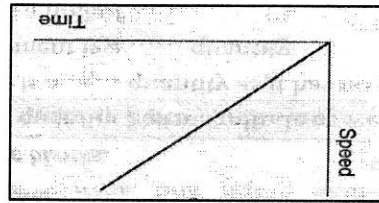
Q5. Organelle other than nucleus, containing DNA is

- | | |
|---------------------------|---------------------|
| (a) Endoplasmic reticulum | (b) Golgi apparatus |
| (c) Mitochondria | (d) Lysosome |

Q15. Which one of the following sets of phenomena would increase on raising the temperature?
 (a) Diffusion, evaporation, compression of gases
 (b) Evaporation, compression of gases, solubility
 (c) Evaporation, diffusion, expansion of gases
 (d) Evaporation, solubility, diffusion, compression of gas.

Q14. All noble gas molecules are
 (a) Monatomic
 (b) Diatomic
 (c) Polyatomic
 (d) Triatomic

(a) Is at rest
 (b) Moves with a constant speed
 (c) Moves with a constant velocity
 (d) Moves with a constant acceleration.



Q13. The speed – time graph of an object moving in a fixed direction is shown in figure. The object:

Q12. Which one of the following is a breed of cattle?
 (a) Jersey
 (b) Scamp
 (c) Ghagus
 (d) Kadaknath

(a) 1 : 1
 (b) 1 : 2
 (c) 2 : 1
 (d) 1 : 3

Q11. A father has mass 60 kg and the mass of his son is 30 kg. The ratio of the inertia of the father to the inertia of his child is:

Q10. Growing two or more crops in definite row pattern is
 (a) Mixed farming
 (b) Mixed cropping
 (c) Inter-cropping
 (d) Crop rotation

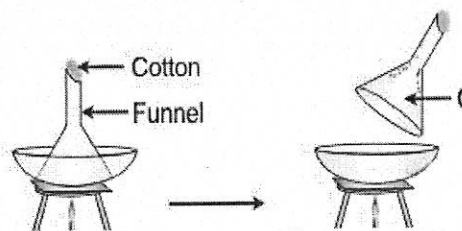
Q9. Walls of collenchyma are irregularly thickened due to the deposition of
 (a) Pectin
 (b) Lignin
 (c) Suberin
 (d) All of these

Q8. Which of the following correctly represents the electronic distribution in the Mg^{2+} ion?
 (a) 3, 8, 1
 (b) 2, 8, 2
 (c) 1, 8, 3
 (d) 2, 8

Q7. Flexibility in plants is due to
 (a) Collenchyma
 (b) Sclerenchyma
 (c) Parenchyma
 (d) Chlorenchyma

Q6. Kitchen of the cell is
 (a) Mitochondria
 (b) Endoplasmic reticulum
 (c) Chloroplast
 (d) Golgi apparatus

Q16 .Apparatus showed in the given figure is used to separate:



(a) Camphor from Naphthalene
(c) Camphor from salt

(b) Ammonium chloride from Camphor
(d) sand from salt

Note: Questions 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 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.

Q17. **Assertion:** Colloidal solutions are stable and the colloidal particles do not settle down.

Reason: Brownian movement counters the force of gravity acting on colloidal particles.

Q18 **Assertion:** If the net external force on the body is zero, then its acceleration is zero.

Reason: Acceleration does not depend on force.

Q19. **Assertion:** Dr V. Kurien is known as the Father of White Revolution.

Reason: White Revolution is associated with milk production.

Q20. **Assertion:** When a bullet is fired from a gun, there is a forward force on the bullet and recoil of gun.

Reason: Every action has an equal and opposite reaction.

Section B (2 Marks Questions)

Q21. (i) Why is nucleus called controller or brain of cell?
(ii) Name the energy currency of cell?

OR

Name the organelle of the cell, which is involved in the formation of lysosomes. Write its functions in the cell.

Q22. Define kWh. State the relation between kWh and joule.

OR

What is the work done by the force of gravity in the following cases?

- (i) Satellite moving around the earth in a circular orbit of radius 35000 km.
(ii) A stone of mass 250 g is thrown up through a height of 2.5 m.

Q23. What is reflection of sound? What are the laws of reflection of sound?

Q24. What happens to the force between two objects, if

- (i) The mass of one object is doubled?
(ii) The distance between the objects is doubled?

OR

State Newton's law of gravitation. Write one difference between universal gravitational constant G and Acceleration due to gravity g .

Q25. (i) Give the names of the elements present in the following compounds:

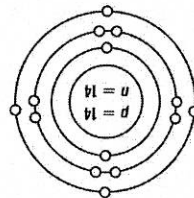
- (a) Quick lime
(b) Hydrogen bromide

(ii) Write the chemical formula of Calcium carbonate.

Q26. Is ^{35}Cl and ^{37}Cl have different valences? Justify your answer.

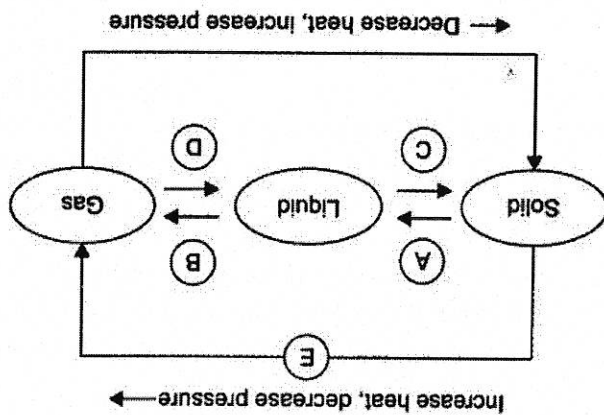
OR

What information do you get from the given figure about the atomic number, mass number and valency of atom? Give symbol of the element.



Section C (3 Marks Questions)

Q27. (i) Name A, B, C, and D in the following diagram showing change in its state



(ii) Why are we able to sip hot tea or milk faster from a saucer rather than a cup? Explain.

Q28. (i) Name a technique to separate a mixture of two or more miscible liquids for which difference in boiling points is less than 25K. What type of column is used in the above techniques and why?

(ii) A solution contains 40 g of salt dissolved in 240 g of solution. Calculate the mass percentage of the solution.

OR

(i) A solution contains 20 g of copper dissolved in 220 g of water. Calculate the mass percentage of the solution.

(ii) Smoke and fog both are aerosols. In what way are they different?

Q29. State reason for the following :

(i) Mitochondria are known as powerhouse of the cell.

(ii) Plant cell shrinks when kept in hypertonic solution.

(iii) Plastids are able to make their own protein.

Q30. Mention three different types of blood cells with their functions. Draw diagrams also.

Q31. Find graphically, equation for distance travelled by the object.

Q32. What is relative density? Write its formula and SI unit.

Q33. (i) What is poultry farming? How does it help in solving food and nutrition problems? Relative density of silver is 10.8. The density of water is 10^3 kg m^{-3} . What is the density of silver in SI unit?

(ii) Name two desirable traits for variety improvement in poultry farming.

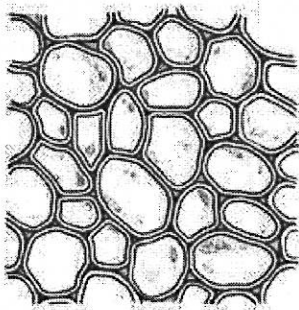
Section D (5 Marks Questions)

- Q34. (i)** If bromine atom is available in the form of say, two isotopes $^{79}_{35}\text{Br}$ (49.7%) and $^{81}_{35}\text{Br}$ (50.3%), calculate the average atomic mass of bromine atom.
- (ii)** In the atom of an element X, 6 electrons are present in the outermost shell. If it acquires noble gas configuration by accepting requisite number of electrons, then what would be the charge on the ion so formed?
- (iii)** Is it possible for the atom of an element to have one electron, one proton and no neutron. If so, name the element.

OR

- (i)** Write any two observations which support the fact that atoms are divisible.
- (ii)** In response to a question, a student stated that in an atom, the number of protons are greater than the number of neutrons, which in turn is greater than the number of electrons. Do you agree with the statement? Justify your answer.
- (iii)** The average atomic mass of a sample of an element X is 16.2 u. What are the percentages of isotopes $^{16}_8\text{X}$ and $^{18}_8\text{X}$ in the sample?

- Q-35. (i)** Draw a diagrammatic labeled sketch of stem tip to show the location of meristematic tissue. Mention the functions of different types of meristematic tissue.
- (ii) (a)** A plant tissue is observed under a microscope, as shown in the figure below. Identify the tissue.



- (b)** State the characteristic features of these cells.

OR

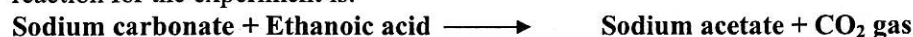
- (i)** Write important functional differences between striated and smooth muscle tissues.
- (ii)** Draw a labeled diagram of the muscle tissue that shows rhythmic contraction and relaxation throughout the life.
- Q-36.** State Newton's 2nd law of motion. Using the relation between the force and rate of change of momentum, obtain the relation between the applied force and acceleration produced by it.

OR

- (i)** Using law of momentum conservation derive the expression for recoil velocity of gun.
- (ii)** A bullet of mass 20 g is horizontally fired with a velocity 150 ms^{-1} from a pistol of mass 2 kg. What is the recoil velocity of the pistol?

Section E (4 Marks Questions)

- Q-37.** In order to verify the law of conservation of mass a student mixed 6.3 g of sodium carbonate and 15g of ethanoic acid in a conical flask. After the experiment he weighed the flask again, The weight of the in the flask was only 18g He approached the teacher who guided him to carry the experiment in a closed flask with a cork. After then there was no difference in weight of the flask before and after the experiment. The reaction for the experiment is:



- (i) What was the mistake committed by the student?
 (ii) Why did not the two weights match each other?
 (iii) What are the products formed?
 (iv) What was the lesson learnt by the student?

OR

Explain law of conservation of mass?

Q-38. A moving object can do work. An object moving faster can do more work than an identical object moving relatively slow. A moving bullet, blowing wind, a rotating wheel, a speeding stone can do work. How does a bullet pierce the target? How does the wind move the blades of a windmill? Objects in motion possess energy. We call this energy kinetic energy. Thus, the kinetic energy possessed by an object of mass, m and moving with a uniform velocity, v is

$$KE = \frac{1}{2} mv^2$$

The energy possessed by an object is thus measured in terms of its capacity of doing work. The unit of energy is, therefore, the same as that of work, that is, joule (J).
 (i) Energy possessed by body which is in motion is called-----
 (ii) Is kinetic energy scalar or vector?
 (iii) What is 1 joule of work?
 (iv) If velocity of moving body is doubled, how KE of the body changes?

Q39. Every cell has a membrane around it to keep its own contents separate from the external environment. Large and complex cells, including cells from multicellular organisms, need a lot of chemical activities to support their complicated structure and function. To keep these activities of different kinds separate from each other, these cells use membrane bound little structures (or organelles) within themselves. This is one of the features of the eukaryotic cells that distinguish them from prokaryotic cells. In prokaryotes, beside the absence of a defined nuclear region, the membrane bound organelles are also absent. On the other hand, the eukaryotes cells have nuclear membrane as well as membrane-enclosed organelles

- (i) What is cell organelles?
 (ii) Name any cell organelle which is non membranous.
 (iii) Who discovered the cell ?
 (iv) What is cell theory?

OR

Write difference between prokaryotic and eukaryotic cell.
