Roll No. _____ **NLCS/09/SCIENCE/ 104**

Half Yearly Exam. 2024 – 2025

Time - 3:00 Hrs. **M.M. 80**

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. A 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. Answer 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

Select and write the most appropriate option out of the four options given for each of the questions no. 1 to 20.

Q.1 Ice floats on the surface of water because-
(a) it is heavier than water (b) ice is lighter than water
(c) the density of both water and ice is the same (d) Combination of these

Q.2 Fluids are -
(a) liquids and gases (b) solids and gases (c) liquids and solids (d) only liquids

Q.3 The quantity of matter present in an object is called its -
(a) weight (b) gram (c) mass (d) density

Q.4 The zig -zag movement of dispersed phase particles in a colloidal system is known as
(a) Brownian motion (b) translational motion (c) circular motion (d) linear motion

Q.5 A 15% alcohol solution means -
(a) 15 mL alcohol and 85 mL water (b) 15 mL alcohol and 100 mL water
(c) 15 mL alcohol and 85 mL alcohol (d) 15 mL alcohol and 50 mL water

Q.6 Which one of the following is correctly matched?
(a) Emulsion - mud (b) foam – mist (c) Aerosol - smoke (D) Solid sol - cake

Q.7 Smoke is an example of -
(a) gas dispersed in liquid (b) gas dispersed in liquid
(c) gas dispersed in liquid (d) gas dispersed in liquid

Q.8 **G**enetic material in prokaryotic cell contained in :
(a) nucleolus (b) nucleus (c) nucleoplasm (d) nucleoid

Q.9 **W**hich of the following is membrane less organelle :
(a) ribosome (b) mitochondria (c) nucleus (d) chloroplast

Q.10 Which of the following tissue provides buoyancy to aquatic plants :
(a) Parenchyma (b) Collenchyma (c)Sclerenchyma (d) none of above.

Q.11 **T**issue that transport food in plants.
(a) xylem (b) phloem (c) stomata (d) none of above

Q.12 The displacement of the body can be-
(a) Positive (b) negative (c) Zero (d) All of these

Q.13 A batsman hits a cricket ball which then rolls on a level ground. After covering a short distance, the ball comes to rest. The ball slows to a stop because
(a) the batsman did not hit the ball hard enough.
(b) velocity is proportional to the force exerted on the ball.
(c) there is a force on the ball opposing the motion.
(d) there is no unbalanced force on the ball, so the ball would want to come to rest.

Q.14 The weight of an object is:

(a) Greater on earth and lesser on Moon (b) Lesser on earth and Greater on earth

(c) Equal on both earth and Moon (d) None of these

Q.15 Where are proteins synthesized inside the cell?

(a) Endoplasmic reticulum (b) Golgi bodies (c) Ribosomes (d) lysosomes

Q.16 ---------- play a crucial role in detoxifying many poison and drugs .

(a).smooth endoplasmic reticulum (b) Rough endoplasmic reticulum.

(c) vacuoles (d) plasma membrane

For Questions number 17 to 20, two statements are given one labelled as Assertion (A) and the other labelled as Reason (R). Select the correct answer to these questions from the codes (A), (B), (C) and (D) as given below.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of the Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of the Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

Q.17 Assertion: The flexibility in plants is due to the sclerenchyma tissue which allows the easy bending in various parts of a plant without breaking.

Reason : Sclerenchyma tissue makes the plant hard and stiff

Q.18 Association: Golgi apparatus is not found in plant cells.

Reason: Golgi apparatus is involved in the formation of lysosomes

Q.19 Assertion : A solution of table salt in a glass of water is homogeneous.

Reason : A solution having different composition throughout is homogeneous.

Q.20 Assertion : Universal gravitational constant G is a scalar quantity.

Reason : The value of G is same throughout the universe.

SECTION - B

Questions no. 21 to 26 are very short answer type questions

Q.21 A sample of water under study was found to boil at 102°C at normal temperature and pressure. Is the water pure?

OR

(a) Conversion of solid to vapour is called sublimation. Name the term used to denote the conversion of vapour to solid.

(b) Conversion of solid state to liquid state is called fusion; what is meant by latent heat of fusion?

Q.22 Which type of cell division is required for growth and repairing of body and which type is involved information of gametes.

Q.23 Xylem and phloem different from one another. Write the two- two difference between them.

OR

(a) Name the tissue that makes up the husk of coconut .

(b) Write the 2 functions of stomata .

Q.24 What is the magnitude of the gravitational force between the earth and a 1 kg object on its surface? (Mass of the earth Is 6×10^{24} kg and radius of the earth is.6.4×10^{6})

Q.25 When a carpet is beaten with a stick, dust comes out of it. Explain.

Q.26 Distinguish between speed and velocity?

SECTION - C

Questions no. 27 to 33 are short answer type questions.

Q.27 Define the cell division in desert plants epidermis has a thick coating of cutin why?

Q.28 (a) Smoke and fog both are aerosols. In what way are they different?

(b) An element is sonorous and highly ductile. Under which category would you classify this element? What other characteristics do you expect the element to possess?

Q.29 Comment on the following statements:

(a) Evaporation produces cooling.

(b) Rate of evaporation of an aqueous solution decreases with increase in humidity

OR

Comment on the following:

(a) Latent heat of fussion. (b) Latent heat of vaporisation

Q.30 **(a)** Which organelle is known as the powerhouse of the cell and why ?

(b) Draw its diagram also .

Q.31 A farmer moves along the boundary of a square field of side10 m in 40 s. What will be the magnitude of displacement of the farmer at the end of 2 minutes20 seconds?

Q.32 State the universal law of gravitation and write it's mathematical relation?

Q.33 Define the following terms : (i) Plasmolysis (ii) Diffusion (iii) Differentiation

SECTION - D

Questions no. 34 to 36 are long answer type questions.

34. (i) Arun has prepared 0.01% (by mass) solution of sodium chloride in water. Find the composition of the solutions?

(ii) Calculate the mass of sodium sulphate required to prepare its 20% (mass percent) solution in 100g of water?

(iii) Can we separate veg. oil dissolved in water by using a separating funnel? If yes, then describe the procedure. If not, explain.

OR

(i) which type of solution is aerated water?

(ii) How much water should be added to 15 gm salt to obtain 15% salt solution?

(iii) Difference between solution, colloids and suspension.

Q.35 **(a)** Why do plant cells possess large size vacuole :

(b) Draw a well labelled diagram of animal cell .

OR

(a) Make a flowchart to show the classification of plants.

(b) Give reason for the following

(i) Intercellular spaces are absent in sclerenchyma tissue

(ii) Branches of a tree move and bend freely in high wind velocity .

Q.36 (a) state newton's first law of motion and give an example?

(b) A stone of 1 kg is thrown with a velocity of $20\ m\ s^{-1}$ across the frozen surface of a lake and comes to rest after travelling a distance of 50 m. What is the force of friction between the stone and the ice?

OR

(a) Draw velocity – time curve (graph) for uniform motion and write the nature of the graph?

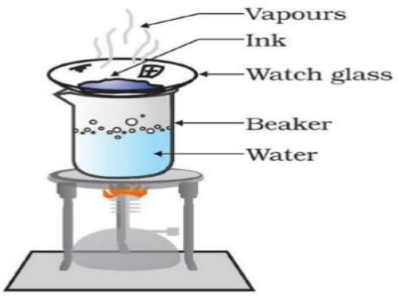
(b) During an experiment, a signal from a spaceship reached the ground station in five minutes. What was the distance of the spaceship from the ground station? The signal travels at the speed of light, that is, 3×10^8 $m\ s^{-1}$.

SECTION - E

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

Q.37 Read the following and answer any four questions from (i) to (iii)

In the given below activity, on heating the solution, water evaporates, and we get back the ink dye in the watch glass. The different substance has a different boiling



point. We use this property to separate the components of the mixture. Here, the boiling point of ink is much higher than that of water. On heating the ink solution, water evaporates while ink dye remains in the China dish.

(i) Name the process shown in the diagram.
(a) Boiling (b) Filtration (c) Crystallisation (d) Distillation

(ii) Which type of substance can be separated by this method ?
(a) Any solvent from its non-volatile solute.
(b) The volatile solvent from its non-volatile solute.
(c) The non-volatile solvent from its non-volatile solute.
(d) The volatile solvent from its volatile solute.

(iii) What can we interpret about the nature of ink?
(a) We cannot separate components of ink. (b) Ink is not a mixture
(c) Ink is pure substance. (d) Ink is a mixture of dyes in water.

OR

(iv) Define the process shown in the diagram.
(a) It is the process of conversion of a liquid into its vapours.
(b) It is a process of separating insoluble component by filtering the solution
(c) It is a process that separates a pure solid in the form of its crystals
(d) It is a technique to separate two miscible liquids

Q.38 Plant and animal cell have similar basic structure but they differ and some manner. Plant cell have an additional outer covering called cell wall which is made up of cellulose. Plant cell also contain cell organelles like plastids which are absent an animal cells. The plant cells have a large vacuole whereas vacuole are small sized in animals.
Based on above passage answer the following question

(i) Which of the following is found only in animal cells and not in plant cells
(a) lysosomes (b) Ribosome (c) Centriole (d) plastids

(ii) Which is called the storage sacs of the cell?
(a) vacuole (b) nucleus (c) Golgi bodies (d) plastid.

(iii) Write 2-2 difference between Plant and animal cell.

OR

(iii) Name the two organelles in plant cell that contain their own genetic material and ribosome.

Q.39 Read the following passage and answer the questions that follow
Action - Reaction forces - In the game of football sometimes we while looking at the football and trying to kick it with a greater force, collide with a player of the opposite team. Both feel hurt because each applies a force to the other. In other words, there is a pair of forces and not just one force. The two opposing forces are also known as action and reaction force. Newton's third law of motion gives a correlation between these forces. According to third law of motion to every action there must be an equal and opposite reaction.

(a) Which law of motion correlates action-reaction forces?

(b) When we kick a stone, we get hurt. Give reasons.

(c) Apply Newton's third law of motion to the following problems:
(i) rowing of a boat in a river. (ii) flight of birds.

OR

(c) Action and reaction are equal in magnitude but opposite in direction. Then, why do not they cancel each other?

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