**KOTHARI INTERNATIONAL SCHOOL, NOIDA**
**ANNUAL EXAMINATION, SESSION: 2025-26**
**GRADE: 9 SUBJECT: SCIENCE (086)**
**SET B**

**DAY & DATE: MONDAY, 16 FEBRUARY, 2026**
**MAXIMUM MARKS: 80** **TIME ALLOTTED: 3 HRS**
**NAME: _____** **ROLL NO:_____**

**GENERAL INSTRUCTIONS:**

i. *This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.*
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.*

**SECTION – A**

**Q1.** Cell secretion is done by: **(1)**

(a) Plastids (b) ER (c) Golgi apparatus (d) Nucleolus

**Q2.** Identify the correct option for the significance of meiosis and mitosis: **(1)**

| | asexual reproduction | growth | sexual reproduction |
|---|---|---|---|
| **A** | meiosis | meiosis | meiosis |
| **B** | meiosis | meiosis | mitosis |
| **C** | mitosis | meiosis | meiosis |
| **D** | mitosis | mitosis | meiosis |

**Q3.** The type of tissue forming the inner lining of blood vessels: **(1)**

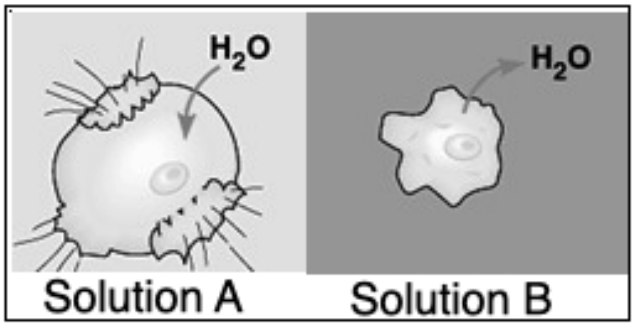
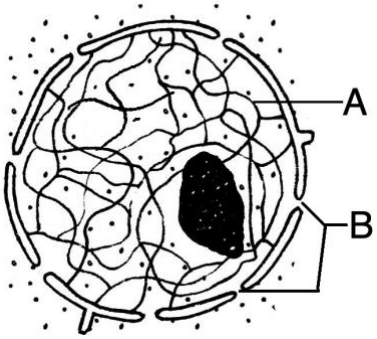
(a) Nervous tissue (b) Epithelial tissue
(c) Connective tissue (d) Muscle tissue

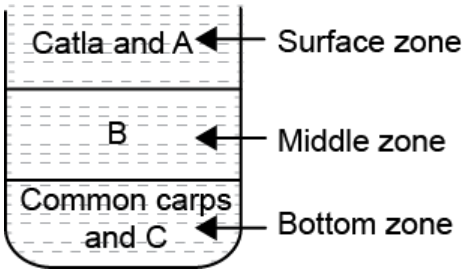
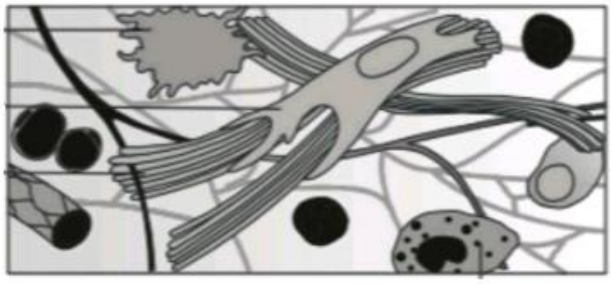
**Q4.** Four groups capture marine fishes with different instruments as listed in the table. **(1)**

| Group | Tool/Equipment used to capture marine fish |
|---|---|
| **A** | Hand-pulled fishing nets |
| **B** | Fishing nets guided by echo sounders |
| **C** | Fishing nets guided by satellites |
| **D** | Pulley based fishing nets |

Which set of groups will most likely get the maximum fish catch?

(a) groups A and B (b) groups B and C
(c) groups C and D (d) groups D and A

| | | |
|---|---|---|
| **Q5.** | Weeds affect the crop plants by:<br><br>(a) killing of plants in field before they grow (b) dominating the plants to grow<br>(c) competing for various resources (d) all of the above | **(1)** |
| | **The following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:**<br>a) Both A and R are true, and R is the correct explanation of A.<br>b) Both A and R are true, and R is not the correct explanation of A.<br>c) A is true but R is false.<br>d) A is false but R is true. | |
| **Q6.** | **Assertion (A):** Leucoplasts perform photosynthesis.<br>**Reason (R):** Leucoplasts store fats, starch and proteins. | **(1)** |
| **Q7.** | **Assertion (A):** Skeletal muscles are under our will, hence we can move or stop them according to our wish.<br>**Reason (R):** All muscles are attached to our bones. | **(1)** |
| **Q8.** | Figure given below shows RBCs 'A' and 'B' kept in two different solutions. Study the figure and answer the following questions:<br>  <br><br>(a) Name the type of solution in which cell 'A and 'B' are kept.<br>(b) Define the process involved in bringing about the above change. | **(2)** |
| **Q9.** | <u>*Students to attempt either option A or B.*</u><br><br>A. Observe the diagram of nucleus and answer the following questions:<br>  <br><br>(a) Identify the parts labelled as A and B.<br>(b) In what form is DNA present in a cell which is:<br>(i) dividing<br>(ii) non dividing<br><br>**OR** | **(2)** |

| | | |
|---|---|---|
| | B.<br>(a) What do you understand by a selectively permeable membrane? Which of the two cell wall or plasma membrane has this feature?<br>(b) How do bacterial cells withstand a very dilute external environment without bursting? | |
| **Q10.** | Differentiate between xylem and phloem. (2 points) | **(2)** |
| **Q11.** | (a) Give two differences between bone and cartilage.<br>(b) Give reason: It is difficult to pull out the husk of coconut. | **(3)** |
| **Q12.** | Draw a neat diagram of an animal cell, **name the following parts** and **label** in the diagram:<br>(a) the powerhouse of the cell<br>(b) suicidal bags of the cell<br>(c) the site for protein and lipids synthesis<br>(d) the control centre of the cell | **(3)** |
| **Q13.** | Animal husbandry refers to livestock raising and selective breeding. The animals are bred, cared, reared and sheltered in a farm or region, which are specially built for them. Animal husbandry involves poultry, milk-farms, apiculture (bee agriculture), aquaculture, etc. An intensive fish culture system known as composite fish culture is shown in the given figure:<br>  <br><br>*Attempt either subpart A or B.*<br>(A) What was the major problem faced in composite fish culture? How was this problem overcome?<br>**OR**<br>(B) Which method is used for improving cattle breeds? What are the advantages of this method?<br>(C) An Italian bee variety *Apis mellifera* has been introduced in India for honey production. What are its merits over other varieties.<br>(D) Differentiate between broilers and layers. | **(4)** |
| **Q14.** | *Attempt either option A or B.*<br>A.<br>(a) Study the given diagram of the connective tissue and answer the questions that follow:<br>  <br>i) Name the type of connective tissue. | **(5)** |

ii) Write the location of this tissue.

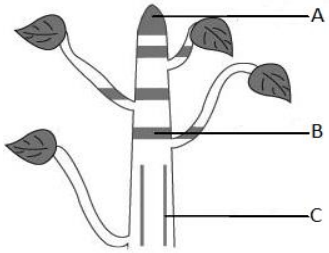
iii) Write its two functions.

(b) Give two important functions of epithelial tissue. Name one specific place in the body where each of the above function is carried out.

**OR**

B.

(a) In the given figure, observe the location of three different types of meristematic tissues A, B and C. Identify these tissues and also write their specific function.




(b) Differentiate between parenchyma and collenchyma tissue with respect to structure, function and location.

## SECTION – B

**Q15.** Which of the following conditions is most favourable for converting gas into liquid? **(1)**

(a) High pressure, low temperature
(b) Low pressure, low temperature
(c) Low pressure, high temperature
(d) High pressure, high temperature

**Q16.** Molecules escape from a liquid during evaporation. The temperature of the remaining liquid changes. Which molecules escape and how does the temperature change? **(1)**

| | molecules escaping | temperature of remaining liquid |
|---|---|---|
| **A** | least energetic | decreases |
| **B** | least energetic | increases |
| **C** | most energetic | decreases |
| **D** | most energetic | increases |

**Q17.** 1 u or 1 amu means: **(1)**

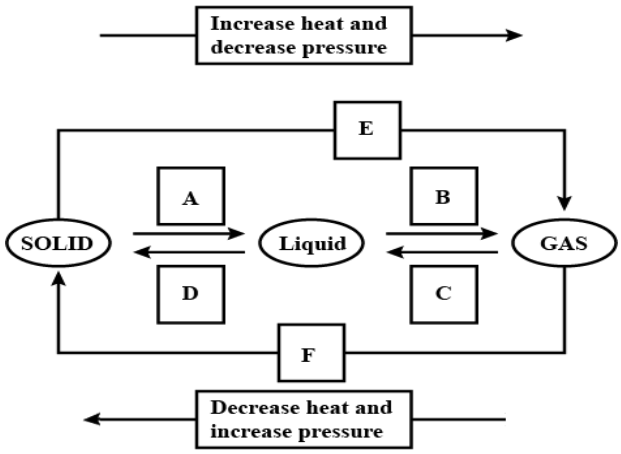
(a) 1/12th mass of C-12 atoms
(b) Mass of C-12 atom
(c) Mass of O-16 atom
(d) Mass of Hydrogen molecule

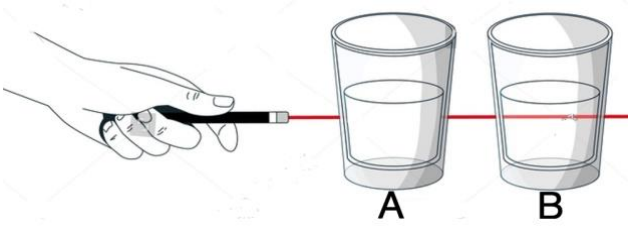
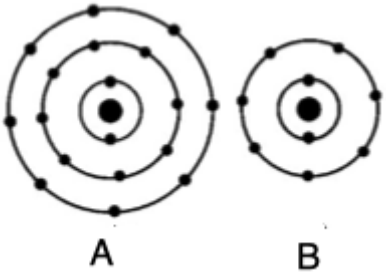
**Q18.** From the following elements ozone, sulphur, argon and phosphorus, which has the highest and lowest atomicity respectively? **(1)**

(a) Ozone and Sulphur
(b) Phosphorus and Argon
(c) Sulphur and Argon
(d) Sulphur and Phosphorus

**Q19.** Two atoms are said to be Isobars if: **(1)**

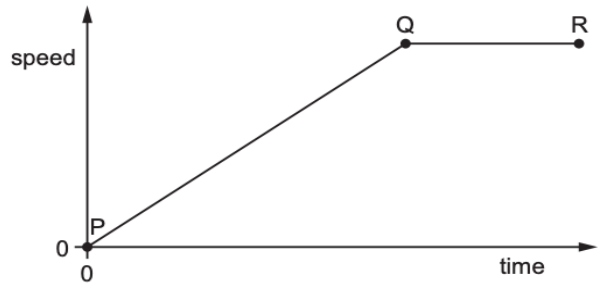
(a) They have same atomic number but different mass number
(b) They have same number of electrons but different number of neutrons
(c) They have the same number of neutrons but different numbers of electrons.
(d) They have the same mass number but different atomic numbers.

| | | |
|---|---|---|
| | **The following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:**<br>a) Both A and R are true, and R is the correct explanation of A.<br>b) Both A and R are true, and R is not the correct explanation of A.<br>c) A is true but R is false.<br>d) A is false but R is true. | |
| **Q20.** | **Assertion (A):** Atoms always combine to form molecule and ions.<br>**Reason (R):** Atoms of most element are not able to exist independently | **(1)** |
| **Q21.** | Give reasons for the following:<br>(a) Ice floats on water.<br>(b) We sweat more on humid days | **(2)** |
| **Q.22** | (a) What do you understand by the statement 'the solubility of Potassium nitrate is 36 g at room temperature'?<br>(b) 10 g of salt is dissolved in 40 g of water. Calculate the concentration in terms of mass by mass percentage of the solution. | **(2)** |
| **Q23.** | *Attempt either option A or B.*<br><br>A.<br>(a) An element 'X' forms an oxide with formula $X_2O_3$.<br>i. State the valency of X.<br>ii. Write the formula of chloride of X.<br>(b) Write the formulae of: Magnesium hydroxide using criss cross method.<br>(c) Write the names of the following compounds: ZnO, NaCl<br><br>**OR**<br><br>B.<br>(a) If 100 grams of pure water taken from different sources is decomposed by passing electricity, 11grams of hydrogen and 89 grams of oxygen are always obtained. State chemical law illustrated by this statement?<br>(b) Calculate the molecular mass of chloroform ($CHCl_3$).<br>(Atomic masses: C = 12 u; H = 1 u; Cl = 35.5 u)<br>(c) What is the difference between an atom and a molecule? Give examples of each. | **(3)** |
| **Q24.** | Name A,B,C,D,E and F in the following diagram showing change in its state<br>  <br> | **(3)** |

| | | |
|---|---|---|
| **Q25.** | Riya conducted an experiment to study the characteristics of two mixtures. She mixed both the mixtures very well and passed a beam of light through the mixtures and found the results as shown in the given picture. She wanted to show this experiment to her younger brother. She kept the mixtures for 30 minutes and waited for her younger brother to return home. She repeated the experiment but the results were different this time. The path of light was not visible in both the mixtures.<br>  <br><br>(A) Name the type of mixtures which were possibly taken by Riya in glass A and B.<br>(B) Name the effect which is seen in glass 'B' and explain the reason behind it.<br>(C) What could be the reason for the different results in the second case when the experiment was repeated.<br><br>*Attempt either option D or E.*<br><br>(D) Give one example of the mixture 'A' and 'B' each.<br><br>**OR**<br>(E) Sugar crystals obtained from sugarcane and beetroot are mixed together. Will it be a pure substance or a mixture? Give reason for the same. | **(4)** |
| **Q26.** | *Attempt either option A or B.*<br><br>A.<br>(a) Observe the following representation of Bohr's model of atoms (A) and (B) and find out the valency and names of the elements.<br>  <br><br>(b) Calculate the number of electrons and neutrons present in an element X whose atomic number is 16 and mass number is 32.<br><br>(c) Which of the two would be chemically more reactive; element 'X' of atomic number 18 or element 'Z' of atomic number 16 and why?<br><br>**OR**<br><br>B.<br>(a) State the postulates of Rutherford's model of an atom. (3 points)<br>(b) Write down the electron distribution of magnesium atom. How many electrons are there in the M shell? | **(5)** |

## SECTION – C

**Q27.** The speed-time graph shows the motion of a car. **(1)**




Which row correctly describes the motion?

| | between P and Q | between Q and R |
|---|---|---|
| **A** | accelerating | moving at constant speed |
| **B** | accelerating | not moving |
| **C** | moving at constant speed | decelerating |
| **D** | moving at constant speed | not moving |

**Q28.** An object is sliding down an inclined plane. The velocity changes at a constant rate from 10 m/s to 15 m/s in two seconds. What is its acceleration? **(1)**

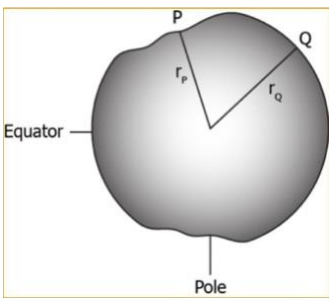
(a) 10 $m/s^2$ (b) 2.9 $m/s^2$ (c) 2 5 $m/s^2$ (d) 2.5 $m/s^2$

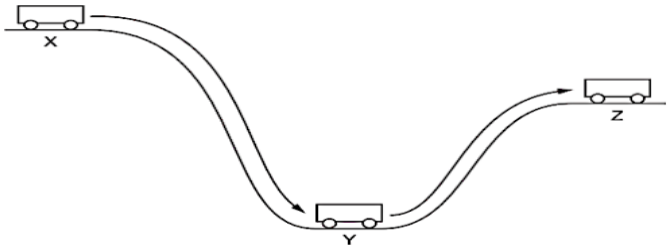
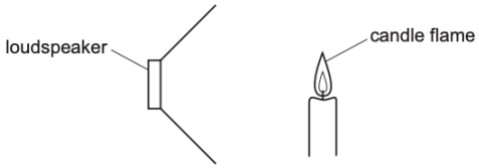
**Q29.** A force of 10 N is acting on a block towards the left, if the force of 15 N is acting towards the right. How much net force is acting on the object? **(1)**

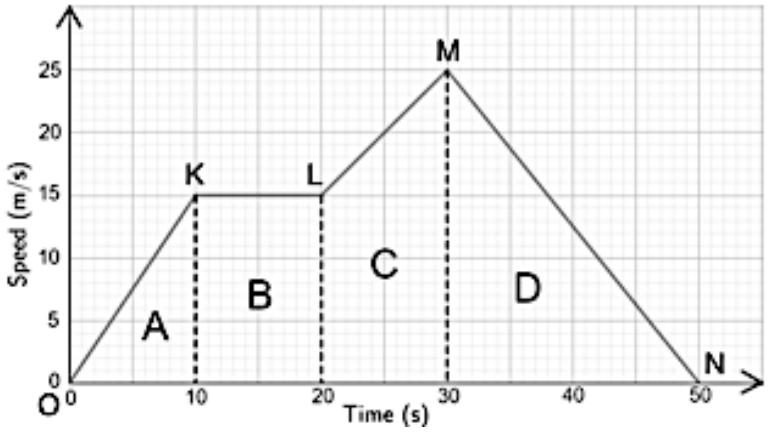
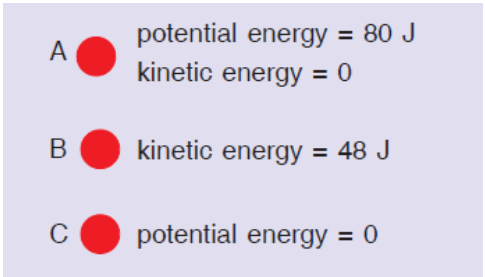
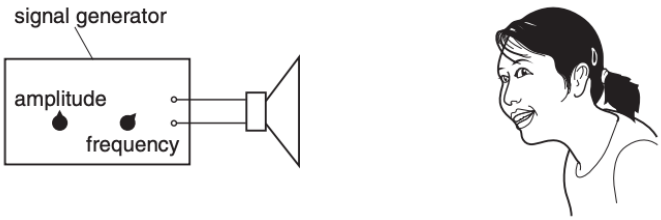
(a) 5 N towards left
(b) 5 N towards right
(c) 25 N towards left
(d) 25 N towards right

**Q30.** The image shows the distances of points P and Q from the Earth's center. If $r_Q > r_P$, how would the acceleration due to gravity (g) and weight of an object (W) compare at these two points: **(1)**

(a) $g_P > g_Q$ and $W_P > W_Q$
(b) $g_P < g_Q$ and $W_P < W_Q$
(c) $g_P > g_Q$ and $W_P < W_Q$
(d) $g_P < g_Q$ and $W_P > W_Q$



| | | |
|---|---|---|
| **Q31.** | A trolley starts from rest at *X*. It rolls down to *Y* and eventually comes to rest at *Z*.<br>  <br><br>Which row is a possible summary of the energy changes during this process?<br>(a) X to Y− PE→KE; Y to Z− KE→PE<br>(b) X to Y− PE→KE; Y to Z− KE→PE+ heat<br>(c) X to Y− PE→KE+ heat; Y to Z− KE→PE<br>(d) X to Y− PE→KE+ heat; Y to Z− KE→PE+ heat | **(1)** |
| **Q32.** | A lighted candle is placed in front of a loudspeaker that is making a loud, steady note. The candle flame vibrates because of the sound wave.<br>  <br><br>Which type of waves are sound waves and in which direction does the flame vibrate?<br>type of wave / direction of vibration<br>A longitudinal ↕<br>B transverse ↕<br>C longitudinal ↔<br>D transverse ↔ | **(1)** |
| | **The following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:**<br>a) Both A and R are true, and R is the correct explanation of A.<br>b) Both A and R are true, and R is not the correct explanation of A.<br>c) A is true but R is false.<br>d) A is false but R is true. | |
| **Q33.** | **Assertion (A):** No work is done with respect to gravity when a woman carrying a load on her head, walks on a level road with a uniform velocity.<br>**Reason (R):** No work is done if force is perpendicular to the direction of displacement | **(1)** |
| **Q34.** | *Attempt either option A or B.*<br>A. A force produces an acceleration of 8m/sec$^2$ when applied on a body of mass 2 kg. Find the magnitude of force. How much acceleration will the same force produce when applied to a body of mass 4 kg?<br>**OR** | **(2)** |

| | | |
|---|---|---|
| | B. An object of mass 100 kg is accelerated uniformly from a velocity of 5 m/s to 8 m/s in 6 s. Calculate the initial and final momentum of the object. Also, find the magnitude of the force exerted on the object. | |
| **Q35.** | Study the velocity- time graph and calculate:<br>  <br><br>(a) What type of motion is represented by OK?<br>(b) What type of motion is represented by MN?<br>(c) Find out the acceleration of the body during LM.<br>(d) Calculate the retardation of the body. | **(3)** |
| **Q36.** | Give reasons for the following:<br><br>(a) Fruits fall off the branches in strong wind.<br>(b) A pillion rider falls forward, when the driver of a two-wheeler suddenly applies brakes.<br>(c) A goalkeeper in a game pulls his hands backwards after holding the ball shot at the goal. | **(3)** |
| **Q37.** | (a) Derive an expression for the kinetic energy of an object.<br>(b) A ball falls to the ground as shown below:<br>  <br><br>i. What is the kinetic energy of ball when it hits the ground?<br>ii. What is the potential energy of ball at B? | **(3)** |
| **Q38.** | A laboratory worker hears the sound from a loudspeaker, as illustrated in the given figure:<br>  <br><br>The amplitude control knob and the frequency control knob on the signal generator are set so that the worker hears a particular note from the loudspeaker. | **(4)** |

| | | |
|---|---|---|
| | (A) The two control knobs are left untouched but the worker stands further away from the loudspeaker. What difference, if any, does this make to the sound heard by the worker?<br>(B) What difference, if any, does it make to the note heard by the worker if<br>(i) the amplitude of the sound wave is increased,<br>(ii) the frequency of the sound wave is increased?<br><br><u>*Attempt either subpart C or D.*</u><br><br>(C) A sonar device on a submarine sends out a signal and receives an echo 5 s later. Calculate the speed of sound in water if the distance of the object from the submarine is 3,625 m.<br><br>**OR**<br><br>(D) A source of a wave produces 30 crests and 30 troughs in 0.3 seconds. What is the time period of the wave? | |
| **Q39.** | <u>*Attempt either option A or B.*</u><br><br>A.<br>(a) State Archimedes' Principle.<br>(b) When does an object float or sink when placed on the surface of a liquid?<br>(c) The volume of 50 g of a substance is 20 $cm^3$. If the density of water is 1 g $cm^3$, will the substance float or sink?<br>(d) School bags are provided with broad straps. Give reason.<br><br>**OR**<br>B.<br>(a)What is the importance of universal law of gravitation? (2 points)<br>(b)The mass of an object on the Earth's surface is 80 kg. Find its weight on Earth and on Moon.<br>(c) When does a body experience weightlessness? | **(5)** |