

- Q5. Four groups capture marine fishes with different instruments as listed in the table. (1)

Group	Tool/Equipment Used to Capture Marine Fishes
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

The following questions 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, and R is not the correct explanation of A.
c) A is true but R is false.
d) A is false but R is true.

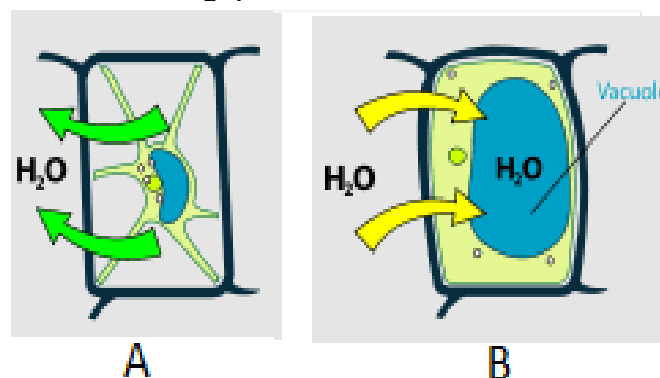
- Q6. **Assertion (A):** The endoplasmic reticulum which lacks ribosomes is called rough endoplasmic reticulum (1)

Reason (R): RER is mainly involved in protein synthesis.

- Q7. **Assertion (A):** Stratified squamous epithelium covers surfaces exposed to mechanical or chemical injury. (1)

Reason (R): Protection of underlying tissues is the major function of stratified squamous epithelium.

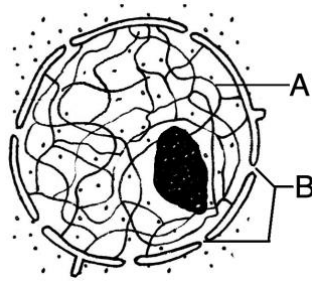
- Q8. Figure given below shows plant cells 'A' and 'B' kept in two different solutions. Study the figure and answer the following questions: (2)



- (a) Name the type of solution in which plant cell 'A' and 'B' are kept.
(b) Define the process involved in bringing about the above change.

- Q9. Students to attempt either option A or B. (2)

A. Observe the diagram of nucleus and answer the following questions:

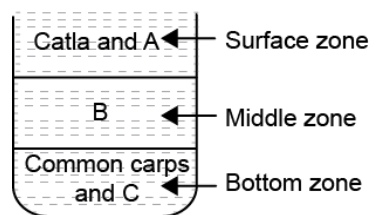


- (a) Identify the parts labelled as A and B.
 (b) In what form is DNA present in a cell which is:
 (i) dividing
 (ii) non dividing

OR

- B. (a) How is a prokaryotic cell different from a eukaryotic cell?
 (b) Mitochondria are known as the powerhouse of the cell. Give reason.

- Q10.** Why blood is known as a connective tissue? Write two functions of blood. (2)
- Q11.** Name the kind of muscles found in the wall of stomach and heart. How do they differ from each other? (2 points) (3)
- Q12.** Draw a neat diagram of a plant cell, **name the following parts** and **label** in the diagram: (3)
 (a) organelle which is site for photosynthesis and storage of food
 (b) provides rigidity and shape to the cell
 (c) stores waste and other materials
 (d) the control centre of the cell
- 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: (4)



Attempt either subpart A or B.

- (A) State two advantages of composite fish culture.

OR

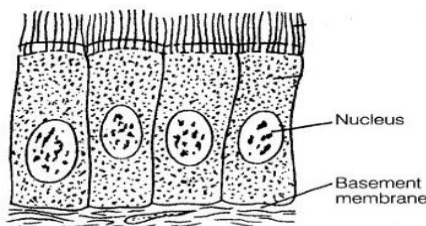
- (B) Which method is used for improving cattle breeds? What are the advantages of this method?
- (C) Differentiate between capture fishery and culture fishery.
- (D) An Italian bee variety *Apis mellifera* has been introduced in India for honey production. What are its merits over other varieties?

Q14. Attempt either option A or B.

(5)

A.

(a) Study the given diagram of the epithelial tissue and answer the questions that follow:



(i) Name the type of epithelial tissue.

(ii) Write the location of this tissue.

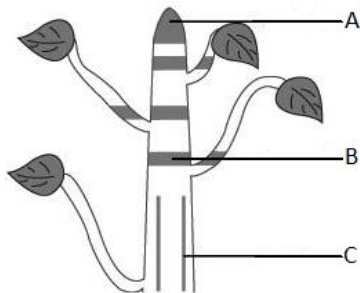
(b) Give two important functions of epithelial tissue. Name one specific place in the body where each function is carried out.

(c) Animals of colder region and fishes of cold water have thick layer of subcutaneous fat. Give reason.

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 and function

SECTION – B

Q15. The melting points of four solid A, B, C and D are 380K, 54K, 290K and 1600K. The forces of attraction are in order of :

(1)

(a) $A < B < C < D$

(b) $B < C < D < A$

(c) $B < C < A < D$

(d) $C < B < A < D$

Q16. Which row describes how the volume of a gas changes when its temperature is increased at constant pressure and when its pressure is increased at constant temperature?

(1)

	temperature is increased at constant pressure	pressure is increased at constant temperature
A	volume decreases	volume decreases
B	volume decreases	volume increases
C	volume increases	volume decreases
D	volume increases	volume increases

- Q17.** Which substance is a mixture of one element and one compound? (1)
- (a) aqueous glucose (b) clean, dry air
(c) oxygen dissolved in distilled water (d) stainless steel
- 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.** Isotopes contain: (1)
- (a) Same atomic number but different mass number
(b) Different atomic number but same mass number
(c) Same atomic number and same mass number
(d) Same number of neutrons and electrons

The following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

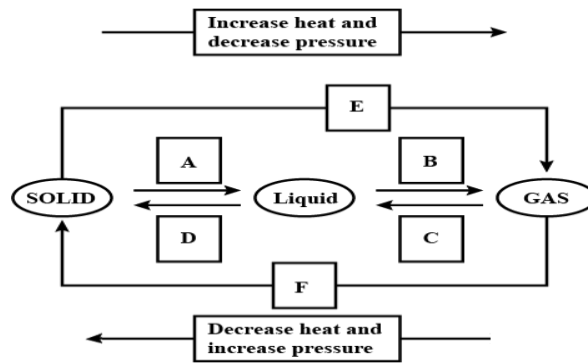
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c) A is true but R is false.
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- Q20.** **Assertion (A):** Ions are always positively charged. (1)
Reason (R): Ions are formed by losing or gaining of electrons.
- Q21.** Give reasons for the following: (2)
- (a) Camphor disappears if kept in open air for a few days.
(b) Wet clothes do not dry easily on a rainy days.
- Q.22** (a) What do you understand by the statement 'the solubility of NaCl is 36 g at room temperature'? (2)
(b) 5 g of salt is dissolved in 20 g of water. Calculate the concentration in terms of mass by mass percentage of the solution.
- Q23.** Attempt either option A or B. (3)
- A.
- (a) An element 'X' forms a chloride with formula XCl_3 .
i. State the valency of X.
ii. Write the formula of oxide of X.
(b) Write the formulae of: Sodium sulphate using criss cross method.
(c) Write the names of the following compounds: ZnS, NaOH

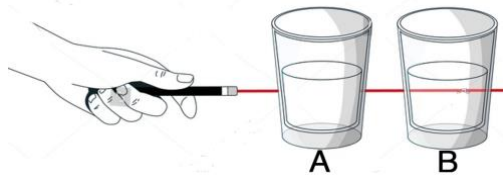
OR

- B.
- (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?
(b) Calculate the molecular mass of chloroform ($CHCl_3$).
(Atomic masses: C = 12 u; H = 1 u; Cl = 35.5 u)
(c) What is the difference between an atom and a molecule? Give examples of each.

Q24. Name A,B,C,D,E and F in the following diagram showing change in its state. (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. (4)



- (A) Name the type of mixtures which were possibly taken by Riya in glass A and B.
- (B) Name the effect which is seen in glass 'B' and explain the reason behind it.
- (C) What could be the reason for the different results in the second case when the experiment was repeated.

Attempt either option D or E.

- (D) Give one example of the mixture 'A' and 'B' each.

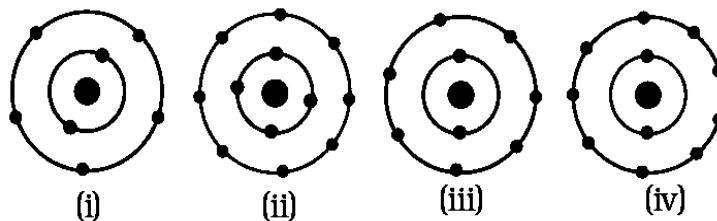
OR

- (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.

Q26. Attempt either option A or B. (5)

A.

- (a) Mention which of the following are correct and incorrect representation of Bohr's model of an atom. Also give reason for incorrect representations.



- (b) Calculate the number of electrons and neutrons present in an element X whose atomic number is 15 and mass number is 31.

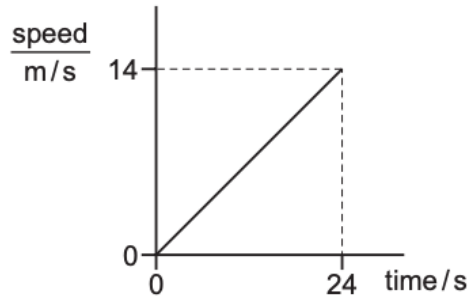
OR

B.

- (a) State the postulates of Bohr's model of an atom. (3 points)
(b) Write down the electron distribution of chlorine atom. How many electrons are there in the L shell?

SECTION – C

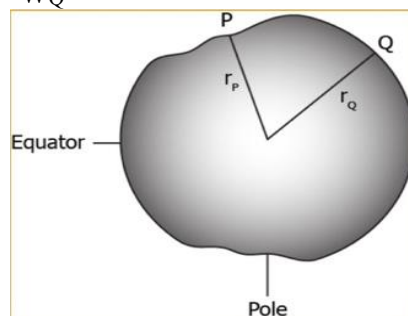
- Q27. The graph shows how the speed of a car changes with time. (1)



Which calculation gives the distance travelled by the car in 24 seconds?

- (a) $14/24$ m (b) $24/14$ m
(c) $(24 \times 14)/2$ m (d) (24×14) m
- Q28. If a body is moving at constant speed in a circular path, its: (1)
- (a) velocity is constant and its acceleration is zero
(b) velocity and acceleration are both changing direction only
(c) velocity and acceleration are both increasing
(d) velocity is constant and acceleration is changing direction
- Q29. A force of 30 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) 15 N towards left (b) 15 N towards right
(c) 45 N towards left (d) 45 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.** Initially, four identical uniform blocks, each of mass m and thickness h , are spread on a table. (1)



The acceleration of free fall is g .

How much work is done on the blocks in stacking them on top of one another?

- (a) $3mgh$ (b) $6mgh$ (c) $8mgh$ (d) $10mgh$
- Q32.** Three vibrating objects P, Q and R produce waves in the air of different frequencies as shown. (1)

object	frequency/Hz
P	25
Q	1000
R	15 000

Which of these waves can be heard by a human ear?

- (a) P, Q and R (b) P and Q only (c) P and R only (d) Q and R only

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- Q33. Assertion (A):** Watt-hour is the unit of energy. (1)
Reason (R): Kilowatt hour (kWh) is the unit of electric power.

- Q34. Attempt either option A or B.** (2)

A.

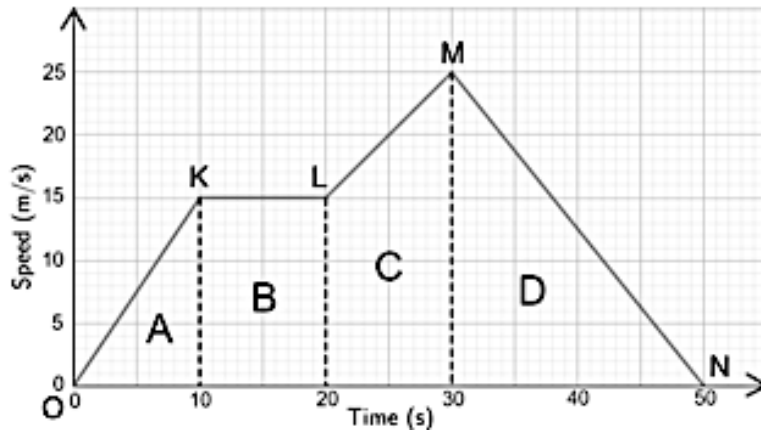
A force produces an acceleration of 5m/sec^2 when applied on a body of mass 2 kg . Find the magnitude of force. How much acceleration will the same force produce when applied to a body of mass 4 kg ?

OR

B. An object of mass 50 kg is accelerated uniformly from a velocity of 6 m/s to 15 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:

(3)



- What type of motion is represented by OK?
- What type of motion is represented by MN?
- Find out the acceleration of the body during LM.
- Calculate the retardation of the body.

Q36. Give reasons for the following:

(3)

- Fastening of seat belts is advised for the passengers sitting in the car.
- On firing a bullet, the rifle gives a backward kick.
- While catching a cricket ball, a player lowers his hands with the ball.

Q37. (a) Derive an expression for the kinetic energy of an object.

(3)

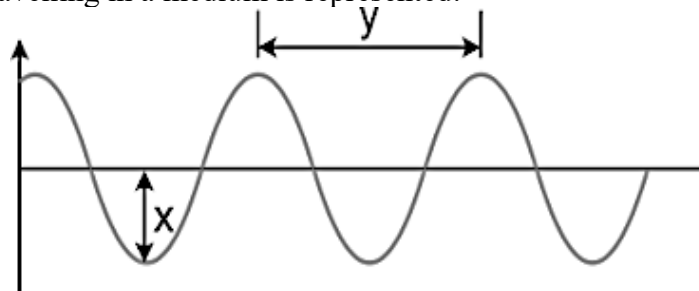
(b) A ball falls to the ground as shown below:

A	●	potential energy = 80 J kinetic energy = 0
B	●	kinetic energy = 48 J
C	●	potential energy = 0

- What is the kinetic energy of ball when it hits the ground?
- What is the potential energy of ball at B?

Q38. A sound wave travelling in a medium is represented:

(4)



- Which letter represents the amplitude of sound and wavelength of the wave?
- Which wave property determines loudness and pitch?

Attempt either subpart C or D.

- (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

OR

- (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. Attempt either option A or B.

(5)

A.

- (a) State Archimedes' Principle.
(b) When does an object float or sink when placed on the surface of a liquid?
(c) The volume of a solid object of mass 500g is 350cm^3 . Find the density of this solid. If the density of water is 1 g cm^3 , will the substance float or sink?
(d) It is easier to cut an apple with a sharp knife than a blunt knife. Give reason.

OR

B.

- (a) What is the difference between acceleration due to gravity (g) and gravitational constant (G)? (2 points)
(b) The mass of an object on the Earth's surface is 50 kg. Find its weight on Earth and Moon.
(c) When does a body experience weightlessness?