Ananya Roy
IX - E

BAL BHARATI PUBLIC SCHOOL, DWARKA
CLASS –IX
MID-TERM EXAMINATION (2024-25)
SUBJECT: GENERAL SCIENCE
SET B

TIME ALLOWED:3 hours | Max. Marks: 80
DATE: 09.08.24

INSTRUCTIONS

1. The question paper consists of three sections A, B and C.
2. Attempt all three sections on separate answer sheets: Section A (Physics, 27 marks); Section B (Chemistry, 25 marks); and Section C (Biology, 28 marks).
3. All questions are mandatory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
4. Draw diagrams wherever necessary.
5. The paper consists of 20 objective type questions carrying 1 mark each, 8 Very Short Answer type questions carrying 02 marks each, 7 Short Answer type questions carrying 03 marks each, 3 Long Answer type questions carrying 05 marks each and 2 source-based/ case-based units of assessment of 4 marks each with sub-parts.

SECTION A
PHYSICS

1. What does the equation $V^2-U^2 = 2as$ represent? (1)
   a) Relationship between velocity and time
   b) Relationship between position and time
   c) Relationship between acceleration and time
   d) Relationship between displacement and velocity.
2. Which of the following is true when a Mango falls from a Mango Tree? (1)
   a) Only the Earth attracts the Mango.
   b) Only the Mango attracts the Earth.
   c) Both Mango and Earth attract each other
   d) Both Mango and Earth repel each other
3. Which of the following statement is correct regarding velocity and speed of a moving body? (1)
   a) Velocity of a moving body is always higher than its speed
   b) Speed of a moving body is always higher than its velocity
   c) Speed of a moving body is its velocity in a given direction
   d) Velocity of a moving body is its speed in a given direction
4. Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below: (1)
   (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.
   Assertion: Two balls of different masses are thrown vertically upwards with the same speed. They pass through the point of projection in their downward motion with the same speed
   Reason: The maximum height and downward velocity attained at the point of projection are independent of the mass of the ball
5. According to Galileo's experiment for a double inclined plane, if slope of second plane is zero and planes are smooth, then a ball is released from rest on one of the planes rolls down and move on the second plane ...X... distance. Here, X is (1)
   a) Zero
   b) Equal to length of first plane
   c) Infinite

d) Stops instantly as the slope of the second plane is zero

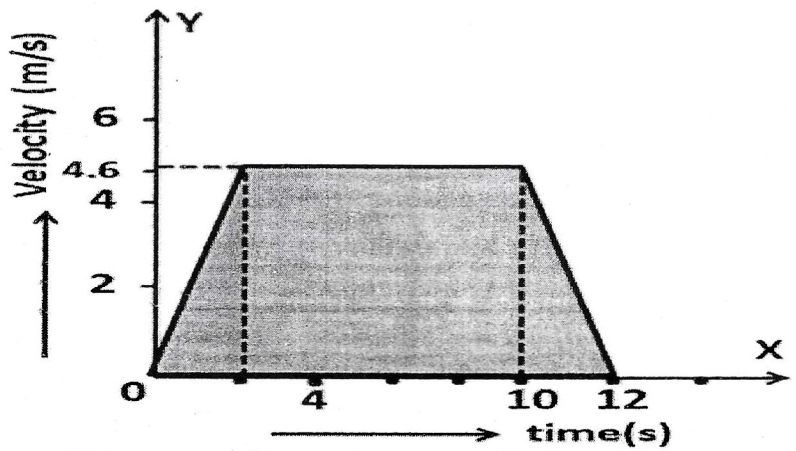
6. The cricket ball of mass 70 g moving with velocity of 0.5 m/s is stopped by a player in 0.5 second. What will be the force applied by the player to stop the ball? (2)

(OR)

6. A particle of 10 kg is moving in a constant acceleration $2m/s^2$ starting from rest. What is its momentum and velocity after 2 s.

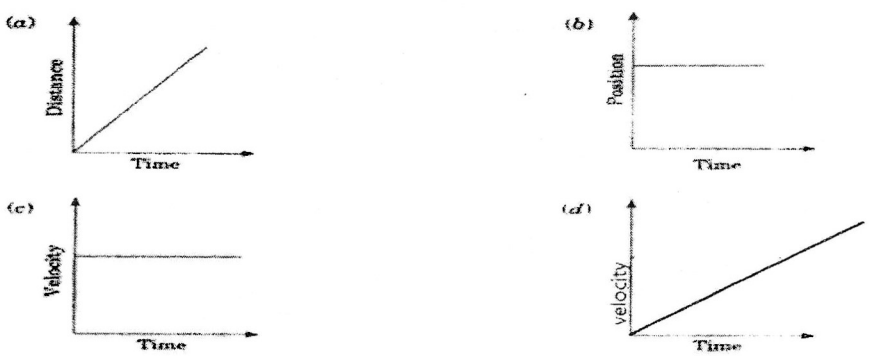
7. a) What do balanced forces usually do to a body? (2)
   b) If you apply a net force of 3 N on 0.1 kg wooden box, what is the acceleration of the box?

8. A speed-time graph of the first 12 seconds of a boy running a race is shown. (2)
   a) Calculate the acceleration between 10 s to12 s.
   b) Find the distance he travels from 2 s to 10 s



9. a) Give any two characteristics of gravitational force. (2)
   b) Give the meaning of centripetal force?

10. a) What type of motion is exhibited by a body if the distance travelled by an object is directly proportional to the time taken? (3)
   b) Choose the correct figure(s) observing the following graphs showing
   i. Equal change of distance in equal intervals of time.
   ii. Under the influence of unbalanced forces.



(OR)

10. State which of the following situations are possible and give an example for each of these:
   a) (i) an object with a constant acceleration but with zero velocity
   (ii) an object moving in a certain direction with an acceleration in the perpendicular direction.

b) In case the velocity of the object is changing at a uniform rate, then give the mathematical expression of average velocity by the arithmetic mean.

11. a) Two cars having masses in the ratio 4:5, accelerate in the ratio 2:3. Find the ratio of forces exerted by each of them. (3)

b) A ball is thrown vertically upward with a speed of 72 km/h. When will it reach the maximum height? Is it balanced or unbalanced forces that cause the motion?

12. a) Give two differences between first and second law of Newton. (3)

b) Define Inertia.

(OR)

12. State Newton's second law and derive the mathematical expression.

13. a) Define the SI unit of force. (5)

b) While catching the faster-moving cricket ball, a fielder often pulls his hand backward with the moving ball. Explain. Which law of Newton governs it.

c) Give an example of inertia of motion.

SECTION B
CHEMISTRY

14. In all the three states of water, (i. e. ice, liquid and vapour) chemical composition of water remains same. (1)

(a) only the physical state is different.
(b) the physical state remains same
(c) sometimes same and sometimes different
(d) none of the above

15. When heat is constantly supplied by a burner to boiling water, then the temperature of the water during vaporization: (1)

(a) Rises very slowly
(b) Rises rapidly until steam is produced
(c) First rises and then becomes constant
(d) Does not rise at all

16. Which of the following phenomena would increase on rising temperature? (1)

(a) Diffusion, evaporation, compression of gases
(b) Evaporation, compression of gases, solubility
(c) Evaporation, diffusion, expansion of gases
(d) Evaporation, solubility, diffusion, compression of gases

(OR)

16. The boiling points of diethyl ether, acetone and n-butyl alcohol are 35°C, 56°C and 118°C respectively. Which one of the following correctly represents their boiling points in kelvin scale?

(a) 306 K, 329 K, 391 K
(b) 308 K, 329 K, 392 K
(c) 308 K, 329 K, 391 K
(d) 329 K, 392 K, 308 K

17. 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

18. Which of the following statements "10 percent glucose in water by mass" signifies. (1)

(a) 10 grams of glucose dissolved in 100 grams of water.
(b) 10 grams of glucose dissolved in 90 grams of water.
(c) 20 grams of glucose dissolved in 200 grams of water.

(d) 20 grams of glucose dissolved in 90 grams of water.

19. Sol and gel are examples of ———— (1)
(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

20. Which of the following are physical changes? (1)
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)

21. Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason (R). Mark the correct choice as:
(a) Both assertion (A) and reason (R) are true and reason (R) is the correct explanation of assertion (A).
(b) Both assertion (A) and reason (R) are true but reason (R) is not the correct explanation of assertion (A).
(c) Assertion (A) is true but reason (R) is false.
(d) Assertion (A) is false but reason (R) is true.
Assertion : A solution of sugar in a glass of water is homogeneous.
Reason : A solution having different composition throughout is homogeneous. (1)

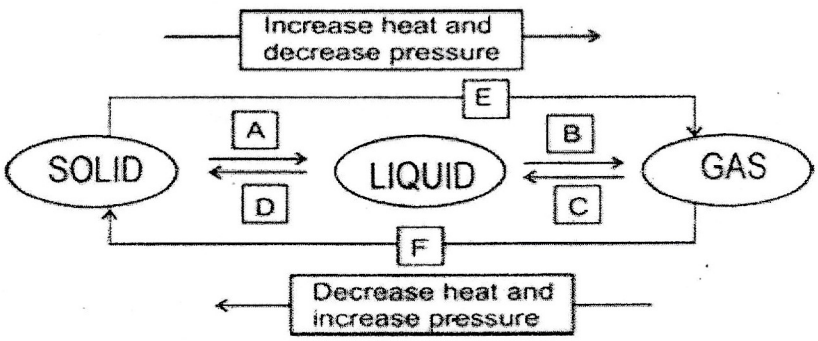
22. Classify each of the following as a homogeneous or heterogeneous mixture. (2)
Soda water, Chalk dust, Soil, Filtered tea

23. (a) Convert the following temperature: (3)
i. 300 K (to Celsius scale) ii. 250°C (to kelvin)
(b) Define Latent heat of fusion.

24. Give reasons for the following: (3)
(1) Naphthalene balls kept in stored warm clothes disappear over a period of time.
(2) A wooden table should be called a solid.
(3) A gas fills the entire space available.

(OR)

24. Name A, B, C, D, E and F in the following diagram.



25. (a) A solution contains 60 g of NaCl in 400 g of water. Calculate the concentration in terms of mass-by-mass percentage of the solution. (5)

(b) How will you differentiate between metals and non-metal based upon the following properties:

a) Conductivity
b) Lustrous
c) Malleablity

26. True solutions are homogeneous but colloidal solutions and suspensions are heterogeneous in nature. Suspensions can be easily filtered whereas colloidal sols require a special technique of filtration. Colloidal sols show some specific characteristics which true solution do not exhibit.

Answer the following questions after reading the passage. **(2+1+1)**

a) What kind of mixture will you get if 1 g of starch is shaken with water? Name it. What is the particle size of the mixture?

b) Sodium chloride is shaken with water thoroughly and the mixture obtained is allowed to pass through the filter paper cone. Will you get any residue?

c)Which of the following substance on dissolution in water form a mixture which does not show Tyndall effect?

i) Clay ii) Magnesium Carbonate iii) Sugar iv) Sulphur powder

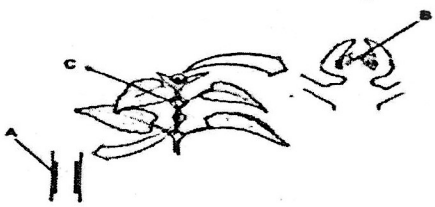
SECTION C
BIOLOGY

27. Which of the following is not a function of the vacuole in plants? (1)

(a) They store toxic metabolic wastes
(b) They help with the process of cell division
(c) They help to maintain turgidity
(d) They provide structural support

28. Which of the following is the correct location of intercalary meristem in plants? (1)

(a) A
(b) B
(c) C
(d) None of the above



29. If the tip of the sugarcane plant is removed from the field, even then it keeps on growing in length. It is due to presence of: (1)

(a) Cambium
(b) Apical meristem
(c) Intercalary meristem
(d) Lateral meristem

30. Cell wall of which one of these is not made up of cellulose. (1)

(a)Bacteria (b) Hydrilla (c) Mango tree (d) Cactus

31. Choose the **incorrect statement**. (1)

(a) Lysosomes carries out the synthesis of lipids
(b) Liquid content of the vacuole in a plant cell is called cell sap
(c) The colourless plastid that stores proteins lipids and starch are called leucoplasts
(d) Lysosomes form the garbage disposal system of animal cells

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

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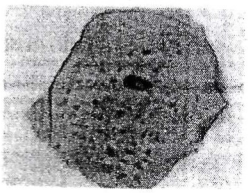
(b) Both A and R are true but R is not the correct explanation of A.
(c) A is true but R is false.
(d) A is false but R is true.

32. **Assertion:** The endoplasmic reticulum which lacks ribosomes is called rough endoplasmic reticulum
Reason: RER is mainly involved in protein synthesis. (1)

33. **Assertion:** The growth of plants occurs only in certain specific regions.
Reason: The meristematic tissue is found all over the plant body. (1)

34. Identify the cell shown in the figure. Why is nucleus seen in the centre of this cell? (2)



35. Iram conducted an experiment to investigate what would happen when different cell organelles of a balsam plant leaf are removed. The results are recorded in the table given below. **Identify cell parts P, Q, R and S.** (2)

Cell Parts	Out comes
P	The cell cannot function properly.
Q	Iodine solution remains yellowish brown.
R	The cell cannot control the entry and exit of the substances.
S	The cell loses its regular shape.

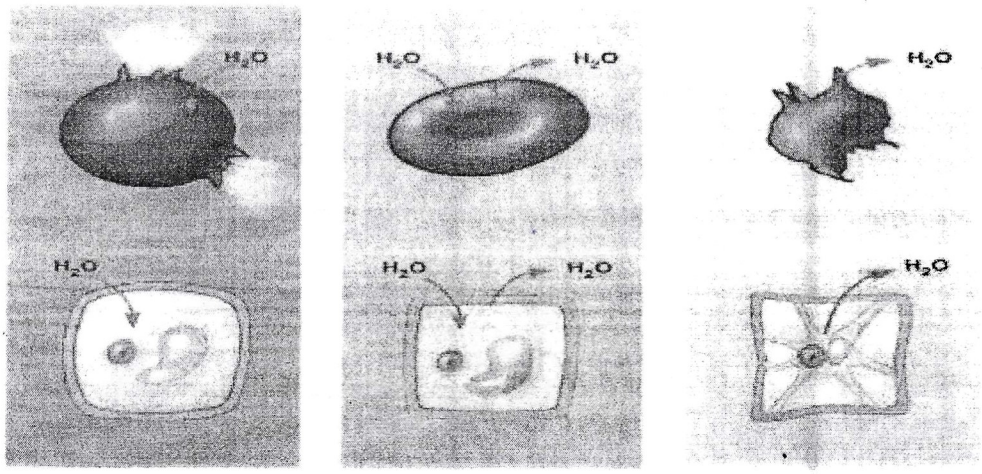
36. Complete the following table: (2)

TISSUE	LOCATION	FUNCTION
A(?)	-	Translocation of organic solutes in plants
Xylem	-	B (?)
Parenchyma	C (?)	D (?)

37. i) Give reasons for the following: (3)
a) Meristematic cells have a prominent nucleus and dense cytoplasm, but they lack vacuole.
b) Roots of plants have mostly leucoplasts in them than chloroplasts.
ii) List any one similarity between mitochondria and plastids with reference to synthesizing of their own materials.

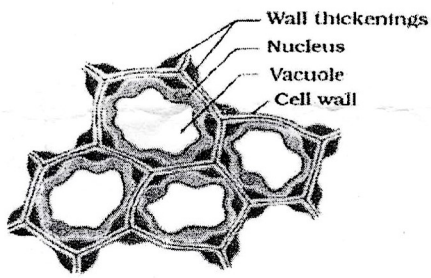
OR

37. i) What happens when:
(a) a plant cell is kept in concentrated saline solution.
(b) Golgi apparatus is removed from the cell.
ii) Which of the following diagram represents the cells placed in hypertonic solution. Give reason for your answer.



A B C

38. Observe the given diagram and answer: (3)
a) Identify the type of tissue
b) Where is this tissue located in the plant?
c) What is the function of this tissue?



39. Draw the diagram of an animal cell and label the parts which: (5)
(a) produces energy for the cell
(b) packages materials coming from the endoplasmic reticulum
(c) separates the cell from surrounding medium
(d) is the hereditary material contained inside the nucleus
ii) How is an onion peel cell different from an animal cell? (Give any two points of differences)

40. **Read the following and answer the following questions.** (4)
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.

1. Ribosomes are the centre for
   (a) respiration
   (b) protein synthesis
   (c) photosynthesis
   (d) fat synthesis
2. Double membrane is absent in
   (a) mitochondria
   (b) chloroplast
   (c) nucleus
   (d) lysosomes
3. Which of the following is responsible for the mechanical support, protein synthesis and transport of material?
   (a) Cell membrane
   (b) Ribosomes
   (c) Endoplasmic reticulum
   (d) Golgi apparatus
4. Which of the following is not a membrane bound organelle?
   (a) Ribosomes
   (b) Lysosomes
   (c) ER
   (d) Nucleus