G - W CLASSES, GONDIA
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PRE MID-TERM EXAMINATION– 2025

SUBJECT :- SCIENCE (086) CLASS :- IX

Date:13/07/2023 **Max. M.: 80**

Name :- _____ **Time : 3 Hours**

SECTION-A (BIOLOGY)

1) A cell will swell up if

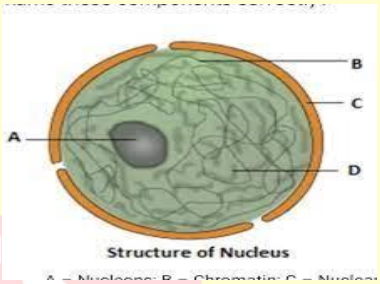
(a) the concentration of water molecules in the cell is higher than the concentration of water molecules in the surrounding medium.

(b) the concentration of water molecules in the surrounding medium is higher than water molecules concentration in the cell.

(c) the concentration of water molecules is same in the cell and in the surrounding medium.

(d) concentration of water molecules does not matter. 1

2) The nucleus controls all the activities of the cell and acts as a site of DNA material and protein synthesis. It is composed of some components which all together give the nucleus its functionality. Here is shown a figure of nucleus with some of its components labeled as A, B, C and D. can you name these components correctly?



Structure of Nucleus

(a) A – Nucleons; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm

(b) A – Nucleus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm

(c) A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nucleoplasm

(d) A – Nucleolus; B – Chromatin; C – Nuclear membrane; D – Nuclear wall 1

3) Endoplasmic reticulum one of the cell organelles, exists as a membranous network that extends from outer membrane of nucleus to the plasma membrane making a connection between them. Which of the following statements is not related to the endoplasmic reticulum?

(a) It behaves as transport channel for proteins between nucleus and cytoplasm.

(b) It transports materials between various regions in cytoplasm.

(c) It can be the site of energy generation.

(d) It can be the site of some biochemical activities of the cell. 1

4) Osmosis is a process by which molecules of a solvent tend to pass through a semipermeable membrane from a less concentrated solution into a more concentrated one. Can you pick out the option among the following which does not belong to this process?

(a) The movement of water across a semipermeable membrane is affected by the amount of substances dissolved in it.

(b) Membranes are made of organic molecules such as proteins and lipids.

(c) Molecules soluble in organic solvents can easily pass through the membrane.

(d) Plasma membranes contain chitin sugar in plants. 1

5) Cardiac muscle is one of the three major types of muscles, the others being skeletal and smooth muscles. It is found in the walls and histological foundation of the heart. Which one of the following statements is not related to the cardiac muscles?

(a) They muscles show rhythmic contraction and relaxation throughout life.

(b) They do not work according to our will, so they are called involuntary muscles.

(c) They are non-striated, multinucleated and branched muscles.

(d) The contraction and relaxation of the heart muscles help to pump and distribute blood to different parts of the body 1

6) **Assertion**: Cells of connective tissue except blood secrete fibres.

Reason: Fibres provide strength, elasticity and flexibility to tissues. 1

7) **Assertion**: The inner lining of intestine has tall epithelial cells.

Reason: Columnar epithelium facilitates absorption and secretion. 1

8) Write a note on Golgi apparatus and the functions it performs. 2

9) Differentiate between meristematic tissue and permanent tissue. 2

10) Draw a labelled diagram of mitochondria. Also Write the functions of mitochondria. 3

11) Briefly describe striated and smooth muscles with their functions. 3

12) i) Draw a neat labelled diagram of plant cell and label its parts.

ii) Why do plant cells have more in number and big-sized vacuoles as compared to the animal cells?

Or

i) Draw a neat labelled diagram of animal cell.

ii) Why do plant cells have more in number and big-sized vacuoles as compared to the animal cells? 5

13) **Connective tissue is specialised to connect various body with each other, for example it connects two or more bones to each other ,muscles to bones, bind different tissues together and also gives support to various parts of the body. The cells of connective tissue are loosely packed, living and embedded in an intercellular matrix that may either be jelly like fluid, dense or rigid in nature. The nature of matrix differs in concordance with the function of the particular connective tissue . The various types of the connective tissue are blood, bones, ligaments, tendons, cartilage, areolar tissue, adipose tissue**

1) Name one fluid connective tissue and mention its composition. 1

2) List two dense regular connective tissues. Also mention their Functions. 2

3) Write name of two fibres present in Areolar connective tissues. 1

SECTION-B (CHEMISTRY)

1) The following four substances are added to water in four separate beakers milk, starch, common salt, sand and are stirred well. A clear and homogeneous solution will be obtained in case of :

(a) Milk (b) Starch (c) Common salt (d) Sand 1

2) Blood and seawater are

a. Both are mixtures

b. Both are compounds

c. Blood is a mixture where is sea water is a compound

d. Blood is a compound and sea water is a mixture 1

3) Which of the following statements are true for pure substances?

A) Pure substances may be compounds or mixtures.

B) Pure substances have different compositions throughout.

C) Pure substances can be exemplified by all elements other than nickel.

D) Pure substances contain only one kind of particle.

4) Which of the following pairs of colloids and their dispersed phase is correct?

a. Smoke – gas b. Cheese – liquid c. Shaving cream – liquid d. Milk of magnesia – liquid 1

5) 1nm means how many meters?

a) $1/10^{9}$ m b) $1/10^{8}$ m c) $1/10^{-9}$ m d) $1/10^{-8}$ m 1

6) Which of the following is not true for a compound?

a. A compound is heterogeneous in nature

b. A compound contains different elements in fixed ratio

c. Properties of a compound are entirely different from those of the elements present in it.

d. Constituents of a compound cannot be separated by simple physical methods. 1

7) **Assertion**: When a beam of light is passed through a colloidal solution placed in a dark place the path of the beam becomes visible.

Reason: Light gets scattered by the colloidal particles. 1

(a) both Assertion and Reason are correct and Reason is the correct explanation of Assertion.

(b) both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) Assertion is correct but Reason is incorrect.

(d) Assertion is incorrect but Reason is correct.

9) In ' tincture of iodine ‘, the solute is _____ and the solvent is _____ 1

10) CO_2 is a gas. Write it’s any two gaseous properties to justify it. How can we liquefy this gas? 2

11) Why do the doctors advise to put strips of wet cloth on the forehead of a person having high fever? 2

12) a) 0.5 g of salt is dissolved in 25 g of water. Calculate the percentage amount of the salt in the solution.

b) A solution has been prepared by mixing 5.6 mL of alcohol with 75 mL of water. Calculate the percentage (by volume) of alcohol in the solution. 3

13) Explain giving examples the various factors on which rate of evaporation depends. 3

14) i) Distinguish between compounds and mixtures.

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

Or

i) What is suspension? Write down the Properties of Suspension

ii) a) What is mean by solution? What are the types of solution?

b) When can you say that a solution is saturated?

c) Give any five examples of pure substance. 5

15) **A group of students took an old shoe box and covered it with a black paper from all sides. They fixed a source of light (a torch) at one end of the box by making a hole in it and made another hole on the other side to view the light. They placed a milk sample contained in a beaker/tumbler in the box as shown in the figure. They were amazed to see that milk taken in the tumbler was illuminated. They tried the same activity by taking a salt solution but found that light simply passed through it. 4**

(a) Explain why the milk sample was illuminated. Name the phenomenon involved.

(b) Same results were not observed with a salt solution. Explain.

(c) Can you suggest two more solutions which would show the same effect as shown by the milk solution?

SECTION-C (PHYSICS)

1) Which of the following statements is/are correct?

I. Mass of an object is the measure of its inertia.

II. Heavier the object smaller is the inertia.

III. The mass of an object is variable.

(a) Only I (b) I and III (c) II and III (d) I and II 1

2) If the displacement-time graph is a straight line, what can be said about the motion of the object?

a) The object is at rest b) The object is in circular motion

c) The object is accelerating d) The object is moving with uniform velocity 1

3) The numerical ratio of displacement to distance covered by a moving object is

a. Always less than 1 b. Always equal to 1

c. Always more than 1 d. Equal or less than 1 1

4) What does Newton's Second Law of Motion state?

a) An object will remain at rest or in uniform motion unless acted upon by an external force

b) Every action has an equal and opposite reaction

c) Force is equal to mass times acceleration d) Force is inversely proportional to mass 1

5) **Assertion :** An object may acquire acceleration even if it is moving at a constant speed.

Reason : With change in the direction of motion, an object can acquire acceleration..

(**a) both Assertion and Reason are correct and Reason is the correct explanation of Assertion.**

(b) both Assertion and Reason are correct, but Reason is not the correct explanation of Assertion.

(c) Assertion is correct but Reason is incorrect. **(d) Assertion is incorrect but Reason is correct.**

6) An electron moving with a velocity of 5×10^4 ms^{-1} enters into a uniform electric field and acquires a uniform acceleration of 10^4 ms^{-2} in the direction of its initial motion.

OR

A car starts from rest and moves along the x-axis with constant acceleration 5 ms^{-2} for 8 seconds. If it then continues with constant velocity, what distance will the car cover in 12 seconds since it started from the rest?2

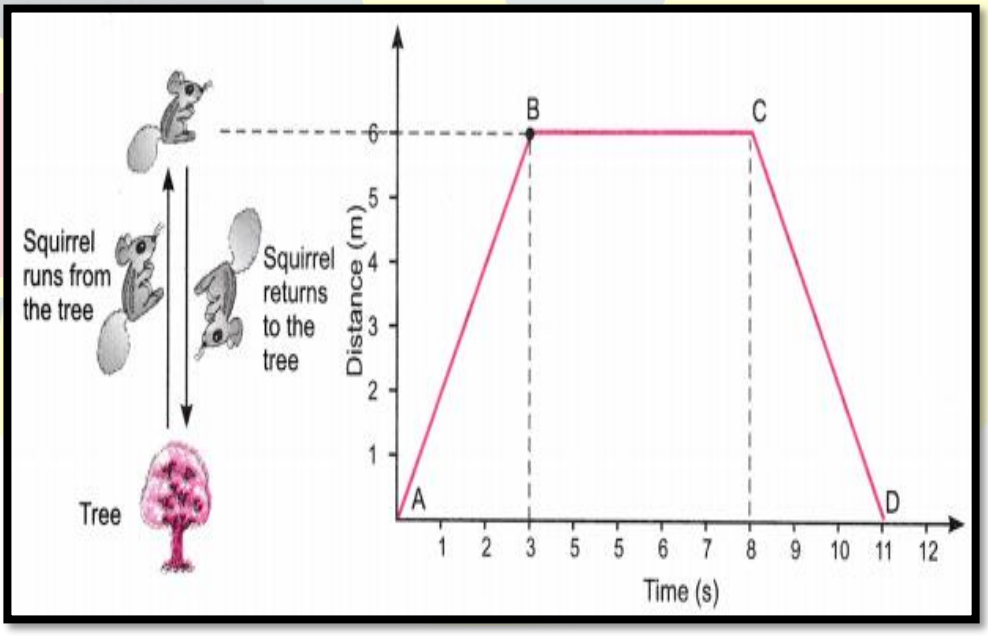
7) Why does a cricket player moves his hand backward while catching the ball? 2

8) Derive Second Equation of Motion Arithmatically. 2

9) A farmer moves along a square field of 10 m in 40 s. What will the farmer's magnitude of displacement be at the end of 2 minutes 20 seconds from his initial position? 3

10) Derive the mathematical relation of Newton's second law of motion. Name the physical quantity that corresponds to the rate of change of momentum. 3

11) Suppose a squirrel is moving at a steady speed from the base of a tree towards some nuts. It then stays in the same position for a while, eating the nuts, before returning to the tree at the same speed. A graph can be plotted with distance on the x-axis and the time on y-axis. Observe the graph carefully and answer the following questions.



(i) Which part of the graph shows the squirrel moving away from the tree?

(ii) Name the point on the graph which is 6 m away from the base of the tree.

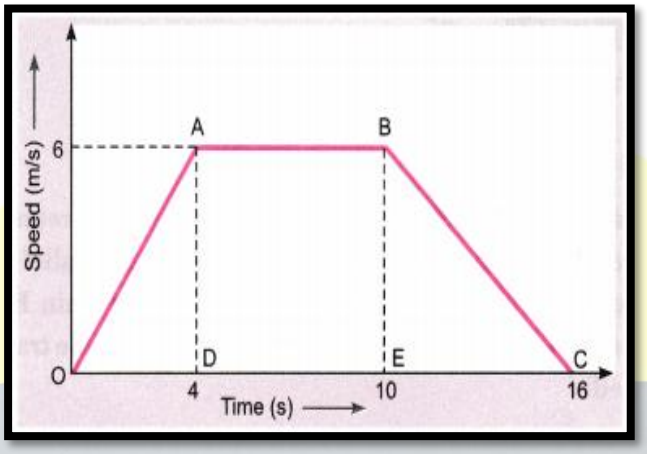
(iii) Which part of the graph shows that the squirrel is not moving?

(iv) Which part of the graph shows that the squirrel is returning to the tree?

(v) Calculate the speed of the squirrel from the graph during its journey.

Or

Study the speed-time graph of a body given here and answer the following questions:



(a) What type of motion is represented by OA?

(b) What type of motion is represented by AB?

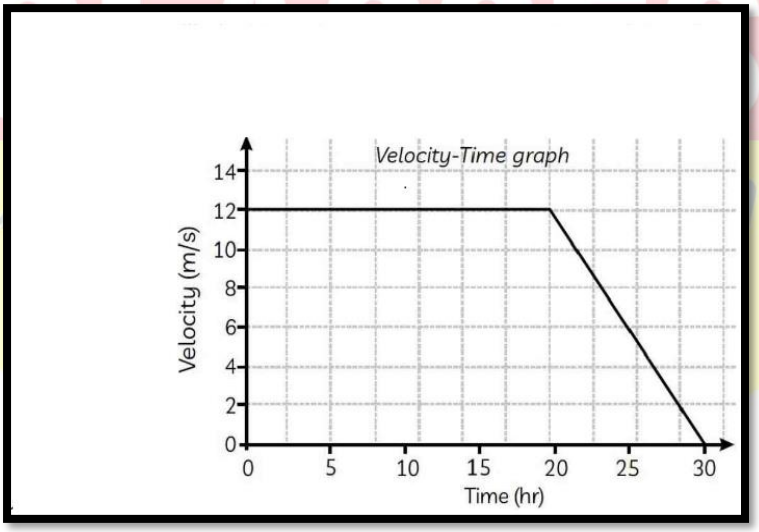
(c) What type of motion is represented by BC?

(d) Find out the acceleration of the body.

(e) Calculate the retardation of the body.

(f) Find out the distance travelled by the body from A to B. 5

12) **Read the following information and answer the questions based on information and related studied concepts. Ritesh was driving car to his office. When suddenly a boy came in between the road, he applied brakes suddenly to save the child and the car came to the rest. The whole scenario was observed by Sita and she draws the velocity-time graph regarding the situation.**



(a) Calculate the displacement of the car after 20 seconds? 2

(b) After deceleration, how far does the car go? 1

(c) Describe the motion of the car from 0 s to 30 s. 1