

O. P. JINDAL SCHOOL, SAVITRI NAGAR
HALF YEARLY EXAMINATION (2023 –2024)

Subject: Science

MM:80

Class: IX

Time:3Hrs

(Fifteen minutes extra will be given for reading the question paper.)

General Instructions:

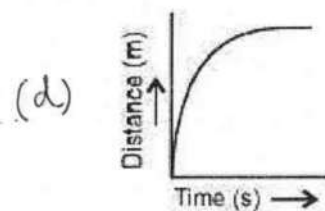
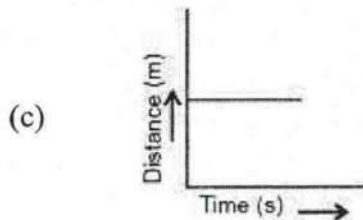
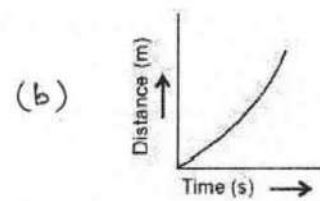
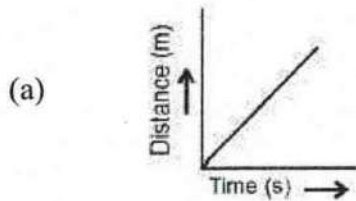
- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section A consists of 20 objective type questions carrying 1 mark each.
- Section B consists of 6 Very Short questions carrying 02 marks each .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 .Answers 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 04marks each with sub-parts.

Section A

Q.1.A car accelerates uniformly from 18 km/h to 36 km/h in 5 minutes. The acceleration is

- (a) 5 ms^{-2} (b) 216 ms^{-2}
(c) 216 km/hr^2 (d) 1 km s^{-2}

Q.2Which of the following figures represent uniform motion of a moving object correctly?



- Q.3.** A form of matter that has no fixed shape but has a fixed volume. An example of this form of matter is
 (a) carbon dioxide (b) ice (c) water vapor (d) kerosene
- Q.4.** The boiling point of water at sea level is
 (a) 0°C (b) 273 K (c) 373 K (d) 273°C
- Q.5.** Flexibility in plants is due to
 (a) Collenchyma (b) sclerenchyma (c) parenchyma (d) chlorenchyma
- Q.6.** Contractile proteins are found in
 (a) bones (b) blood (c) cartilage (d) muscles
- Q.7.** Name the connecting tissue that connects a muscle to the bone.
 (a) Areolar tissue (b) Cartilage (c) Ligament (d) Tendon
- Q.8.** Which of the phenomenon would increase on raising the temperature-
 (a) Diffusion, Evaporation, compression of gases
 (b) Evaporation, compression of gases, solubility
 (c) Evaporation, diffusion, expansion of gases.
 (d) compression of gases, solubility, diffusion
- Q.9.** DNA is not present in
 (a) chloroplast (b) mitochondria (c) nucleus (d) ribosome
- Q.10.** Granular structures present on the rough endoplasmic reticulum are
 (a) lipids (b) plastids (c) ribosomes (d) lysosomes
- Q.11.** Slope of a velocity–time graph gives
 (a) the distance (ii) the displacement (iii) the acceleration (iv) the speed
- Q.12.** Action and reaction forces
 (a) Act on the same body (b) Act on different bodies
 (c) Act in same direction (d) Both I and II
- Q.13.** Cristae are associated with
 (a) nucleus (b) chloroplast (c) cell wall (d) mitochondria
- Q.14.** Which of the following is not a homogeneous mixture?
 (a) Air (b) Tincture of iodine (c) Sugar solution (d) milk
- Q.15.** “10 percent glucose in water by mass” signifies.
 (a) 10 gram of glucose dissolved in 100 gram of water.
 (b) 10 gram of glucose dissolved in 90 gram of water.
 (c) 20 gram of glucose dissolved in 200 gram of water.
 (d) 20 gram of glucose dissolved in 90 gram of water.
- Q.16.** An example of liquid metal and liquid non-metal at room temperature is
 (a) Gallium, mercury (c) Mercury, bromine
 (b) Mercury, chlorine (d) Bromine, sulphur

Note: Questions 17 to 20 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 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.

Q.17 Assertion - A sponge is the solid matter which we easily compressed by our hand .

Reason- Sponge has minute hole which is full of air by pressing it the air is further absorbed in hole.

Q.18 .Assertion : Velocity versus time graph of a particle in uniform motion along a straight path is a line parallel to the time axis.

Reason : In uniform motion the velocity of a particle increases as the square of the time elapsed.

Q.19Assertion : Mitochondria are known as the powerhouse of a cell.

Reason : These generate energy (as ATP) for various cellular activities.

Q.20.Assertion : If the net external force on the body is zero, then its acceleration is zero.

Reason: Acceleration does not depend on force.

Section B (2 Marks Questions)

Q.21.(i)How do substances like carbon dioxide and water move in and out of the cell ?

(ii)Where do the lipids and proteins constituting the cell membrane get synthesized?

Q.22.(i)How does the cork act as a protective tissue ?

(ii)What is the specific function of cardiac muscle ?

Q.23 A particle moves 3 m north then 4 m east and finally 6 m south. Calculate the displacement.

Q.24A person moves a distance of 3 km towards east, then 2 km towards north and 3.5 km towards east. Find (i) distance covered by the person (ii) displacement

Why are we able to sip hot tea or milk faster from a saucer rather than a cup?

Q.25 Give reason for the following observations.

(i) Naphthalene balls disappear with time without leaving any solid.

(ii) We can get the smell of perfume sitting several meters away.

Q.26.(i)Explain why particles of a colloidal solution do not settle down when left undisturbed, while in the case of a suspension they do.

(ii) Is water an element or a compound? Give reason in support of your statement

OR

A solution has been prepared by mixing 15ml of alcohol with 75 ml of water.

Calculate the percentage (by volume) of alcohol in the solution.

Section C (3 Marks Questions)

Q.27.(i) Why steam at 100°C is better for heating purposes than water at 100°C?

(ii)Why do we feel comfortable under a fan when we are perspiring?

(iii) Convert the following temperature to Celsius scale:

(a) 340K

(b) 773 K

Q.28.(i) To make a saturated solution, 72 g of sodium chloride is dissolved in 200g of water at 293 K. Find its concentration at this temperature.

(ii)Identify the dispersed phase and dispersing medium in Fog and Cheese

Q29.(i)Describe the phenomenon of membrane biogenesis. Give one function of ER.

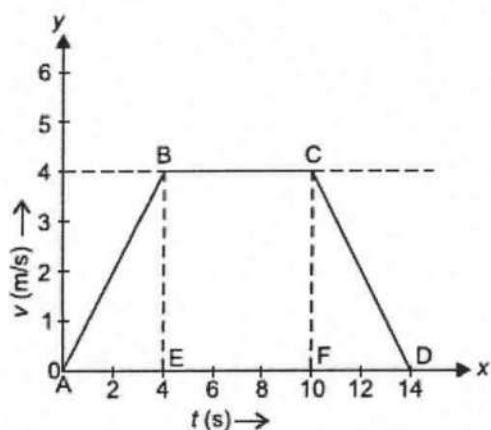
(ii) Name the organelle of the cell, which is involved in the formation of lysosomes. Write its function in the cell.

(iii) State three differences between plasma membrane and cell wall.

Q30. State reason for the following :

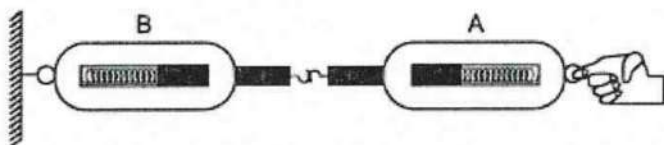
- (i) Nucleus is known as brain of cell
- (ii) Plastids are able to make their own protein.
- (iii) Plant cell shrinks when kept in hypertonic solution.

Q31. Study the given graph and answer the following questions.



- (i) Which part of the graph shows accelerated motion and what is its magnitude?
- (ii) Which part of the graph shows retarded motion and what is its magnitude?
- (iii) Calculate the distance travelled by the body in first 10 seconds of journey graphically

Q32. Look at the diagram above and answer the following questions:



- (i) When a force is applied through the free end of the spring balance A, the reading on the spring balance A is 15 g wt. What will be the reading of spring balance B?
- (ii) Write reasons for your answer.
- (iii) Name the force which balance A exerts on balance B and the force of balance B on balance A.

Q33. Draw a diagrammatic labeled sketch of stem tip to show the location of meristematic tissue. Mention the functions of different types of meristematic tissue.

OR

Describe three different types of blood cells with their functions. Draw diagrams also.

Section D (5 Marks Questions)

- Q34.i)** Why is it not possible to distinguish particles of a solute from the solvent in solution?
- ii) Sea water can be classified as homogeneous as well as heterogeneous mixture, Comment.
- iii) An unknown substance 'A' on thermal decomposition produces 'B' and 'C'. What is 'A' an element, a compound or a mixture? Comment.

OR

Non-metals are usually poor conductors of heat and electricity. They are non-lustrous, non-sonorous, non-malleable and are colored.

- (i) Name a lustrous non-metal.
- (ii) Name a metal which exists as a liquid at room temperature.
- (iii) The allotropic form of a non-metal is a good conductor of electricity. Name the allotope.

(iv) Name a non-metal which is known to form the largest number of compounds.

(v) Name a non-metal which is required for combustion.

Q.35. Explain the significance of the following:

(i) Hair-like structures on epidermal cells.

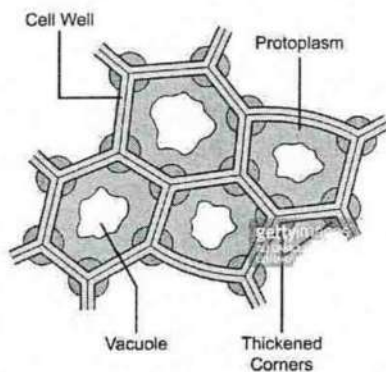
(ii) Epidermis has a thick waxy coating of cutin in desert plants.

(iii) Small pores in epidermis of leaf.

(iv) Numerous layers of epidermis in cactus.

(v) Presence of a chemical suberin in cork cells.

OR



(i) Identify the tissue given in the following figure.

(ii) Mention the characteristic features of the cells.

(iii) Specify the function of this tissue.

(iv) Name any one part of the plant, where these cells are present.

Q.36 (i) What is the relationship between force and acceleration?

(i) What name is given to the product of mass and velocity of a body?

(ii) Which physical quantity corresponds to the rate of change of momentum?

(iii) Name the principle on which a rocket works.

OR

State and prove Newton's second law of motion using graphical method.

Section E (4 Marks Questions)

Q-37. The minimum temperature at which a solid melts to become a liquid at the atmospheric pressure is called its melting point. The temperature of the system does not change after the melting point is reached, till all the ice melts. This happens even though we continue to heat the beaker, that is, we continue to supply heat. This heat gets used up in changing the state by overcoming the forces of attraction between the particles. The amount of heat energy that is required to change 1 kg of a solid into liquid at atmospheric pressure at its melting point is known as the latent heat of fusion. So, particles in water at 0°C (273 K) have more energy as compared to particles in ice at the same temperature.

The temperature at which a liquid starts boiling at the atmospheric pressure is known as its boiling point. Boiling is a bulk phenomenon. Particles from the bulk of the liquid gain enough energy to change into the vapour state. A change of state directly from solid to gas without changing into liquid state is called sublimation and the direct change of gas to solid without changing into liquid is called deposition.

i.) A change of state directly from solid to gas without changing into liquid state is called

a.) Sublimation b.) Deposition c.) Boiling point d.) None of these

ii.) The direct change of gas to solid without changing into liquid is called

a.) Sublimation b.) Deposition c.) Boiling point d.) None of these

iii.) Why does water at 273K have more heat than ice at 273K?

OR

Define latent heat of fusion.

Q-38. A bullet of 10g strikes a sand bag at a speed of 10^3 ms^{-1} and gets embedded after travelling 5cm. Calculate

(i) The resistive force exerted by sand on the bullet.

(ii) The time taken by bullet to come to rest.

Q39. 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

(i) What is the main constituent of the cell wall ?

(ii) Name two unicellular organisms.

(iii) What is the function of cellulose in plant cell ?

(iv) Write one difference between prokaryotic and eukaryotic cell.
