

SUBJECT: SCIENCE

MAX. MARKS : 80

CLASS : IX

DURATION : 3 HRS

**General Instructions:**

1. All questions are compulsory.
2. The question paper comprises of **two Sections, A and B**. You are to attempt both the sections.
3. All questions of **Section-A** and **Section-B** are to be attempted separately.
4. There is an internal choice in three questions of three marks each and two question of five marks.
5. Question number **1 to 2** in **Section-A** are **one mark** question. These are to be answered in **one word** or in **one sentence**.
6. Question numbers **3 to 5** in **Section-A** are **two marks** questions. These are to be answered in about **30 words** each.
7. Question numbers **6 to 15** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each.
8. Question numbers **16 to 21** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.
9. Question numbers **22 to 27** in **Section-B** are questions based on practical skills and are **two marks** questions.

**SECTION – A**

1. Name the term which is used for the following:
  - (i) The left and right halves of the body have the same design.
  - (ii) The animal tissue differentiate from the three embryonic germ layers.
2. What would happen if carbon dioxide content of the atmosphere increases?
3. What is biological fixation? How is it different from nitrification? Give an example of organism involved in each of these.
4. (a) Sound is produced when your school bell is struck with a hammer. Why?  
(b) Which characteristic of sound helps to identify your friend by his voice while sitting with others in a dark room?
5. Where is ozone layer found in atmosphere? What is its importance? Write the harmful effects of UV rays?
6. Define weeding. Name some common tools used for weeding.
7. Give reasons:
  - (a) A karate player suddenly reduces the speed of his hand while hitting an ice slab.
  - (b) Glass ware are covered with paper and straw while transportation.
8. A student lifts an object in the upward direction. In doing so, he applies the force on the object in the upward direction and displaces it in that direction: (However, the force of gravity is also acting on the object.)
  - (a) State the direction in which force of gravity is acting on it.
  - (b) Which one of these forces is doing positive work? Give reason.
  - (c) Which one of these forces is doing negative work? Give reason.

**OR**

- (a) Define kinetic energy.

(b) The masses of scooter and bike are in the ratio of 2 : 3, but both are moving with the same speed of 108 km/h. Compute the ratio of their kinetic energy.

9. (a) Define matter and write its three states.  
(b) Explain how these states of matter arise due to variation in the characteristics of the particles.

**OR**

Define the following terms: (a) Latent heat of fusion. (b) Melting point. (c) Fusion.

10. Define solubility. How does solubility of a solid in water change with temperature?

11. (a) Define atomic mass unit.  
(b) Distinguish between molecular mass and molar mass.  
(c) Give an example of (i) diatomic, and (ii) triatomic molecule of compounds.

12. Define the following terms: Protoplasm, cytoplasm, nucleoplasm

13. Write the name used for the following:

- (a) Plants which bear naked seeds.  
(b) Animals which have pseudocoelom.  
(c) Animals which maintain a certain body temperature over a wide range of temperature in the environment.

**OR**

- (a) List any two main characteristics of protochordates.  
(b) In which class would you place any organism which has-  
(i) four chambered heart and lay eggs.  
(ii) skeletons made of both bones and cartilage and are cold-blooded.

14. (a) Define uniform acceleration. What is the acceleration of a body moving with uniform velocity?  
(b) A particle moves over three quarters of a circle of radius  $r$ . What is the magnitude of its displacement?

15. A boy of mass 50 kg running 5 m/s jumps on to a 20 kg trolley travelling in the same direction at 1.5 m/s. Find their common velocity.

16. (a) What are communicable diseases?  
(b) What are common methods of transmission of diseases?

17. (a) Calculate the number of oxygen atoms in 0.10 mole of  $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ .  
(b) If one mole of sulphur weighs 32 grams, what is the mass (in grams) of 1 atom of sulphur?  
(c) Identify the correct formula for ammonium sulphate from the following formula:  
 $(\text{NH}_4)(\text{SO}_4)_3, (\text{NH}_4)_2\text{SO}_4, \text{NH}_4(\text{SO}_4)_2$

18. How were cathode rays produced using a discharge tube? Give four properties of cathode rays. Why does  $e/m$  ratio of negatively charged particles remain constant for all gases? Draw a neat and labelled diagram of a cathode ray tube.

**OR**

- (a) What are the postulates of Bohr's model of an atom?  
(b) Show diagrammatically the electron distributions in Sodium, Lithium and Aluminium atoms.

19. (a) Define 1 kWh.

- (b) A crane is lifting a body to a height  $h$  in time  $t$ . Find the relation between the power of crane to the speed at which it is lifting the object.

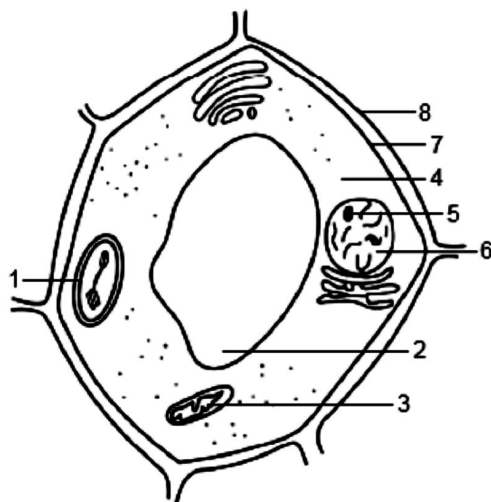
(c) If an electric iron of 1600 W is used for 45 minutes everyday, find the electric energy consumed in the month of March.

20. Given below is a diagrammatic sketch of a certain generalised cell.

(a) Name the parts numbered as 1 to 8.

(b) Is it a plant cell or an animal cell? Give two reasons in support of your answer.

(c) Give the functions of parts marked as 1, 6 and 8.



21. Based upon cell shape, cell wall and intercellular spaces, prepare a comparative study table between parenchyma, collenchyma and sclerenchyma. Which of these tissues is dead.

OR

Answer the followings:

(a) Name the constituents of phloem tissues.

(b) Write the specific function of cardiac muscle.

(c) State two differences between tendon and ligament.

(d) Name the tissue that:

(i) forms inner lining of our mouth.

(ii) forms soft parts of leaf, stem, root and fruit.

(e) Write two functions of adipose tissues.

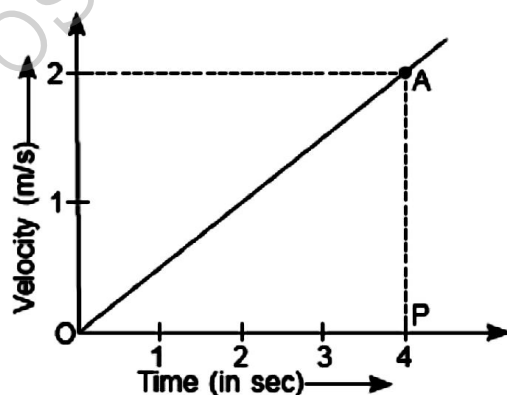
22. The velocity-time graph of a particle of mass 50 g moving in a definite direction is shown in the following figure. Answer the questions based on this figure.

(a) What is the velocity of the particle at point 'A'?

(b) Find the momentum of the particle at time  $t = 4$  s.

(c) What does the slope of a graph represent?

(d) Calculate the distance travelled in 4 seconds.



## SECTION – B

23. Two children stand on two separate carts as shown in the figure.



Each has a bag full of sand or some other heavy object. Let one child throw the bag to the other who catches it.

Does each of them receive an instantaneous reaction as a result of throwing the sand bag (action)? How do you observe that?

Why are skateboards not used in this case?

24. Which phenomenon occurs during the following changes?

- (i) Formation of clouds
- (ii) Drying of wet clothes,
- (iii) wax melts in the sun
- (iv) Size of naphthalene balls decreases.

25. Composition of the nuclei of two atomic species A and B are given as under:

| Elements        | A  | B  |
|-----------------|----|----|
| <b>Protons</b>  | 17 | 17 |
| <b>Neutrons</b> | 18 | 20 |

- (a) What are the mass numbers of A and B?
- (b) How are they related to each other?

26. An object is suspended with a string which gets stretched. When the object is completely immersed in water, the extension of string decreases. Explain why it happens.

**OR**

During arm wrestling, participants put their arms on the table, and wrestle with the palms. If the force exerted by both the players is equal,

- (a) Where are balanced forces acting?
- (b) Where is the action reaction pair acting?

27. Draw a graph for a wave representing wave disturbance and time for a sound changing from low pitch to high pitch, keeping the amplitude of the sound same.

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