

S-1

MID-TERM EXAMINATION - 2024

SUBJECT - SCIENCE (SET 1)

TIME DURATION: 3 HOURS

M.M.: 80

General Instructions:

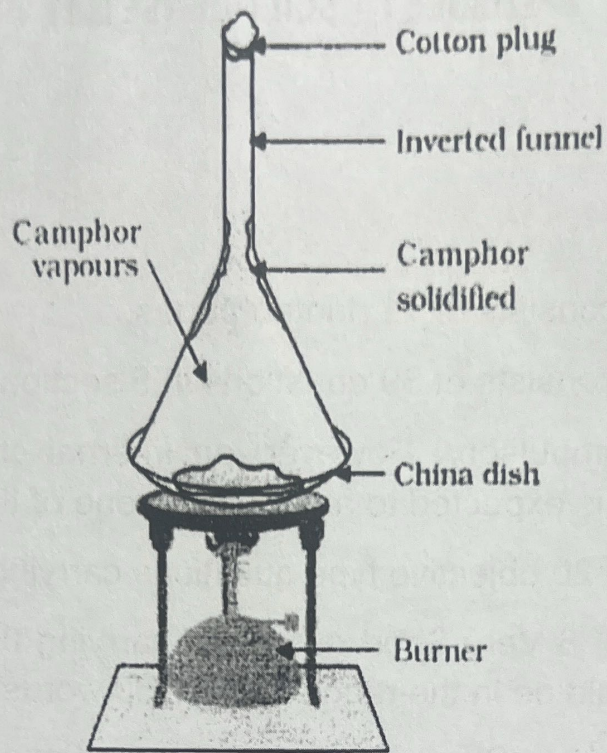
1. This question paper consists of 11 printed pages.
2. This question paper consists of 39 questions in 5 sections.
3. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
4. Section A consists of 20 objective type questions carrying 1 mark each.
5. 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.
6. 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.
7. 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.
8. Section E consists of 3 source-based/case-based units of assessment of 04 marks, each with sub-parts.

SECTION A

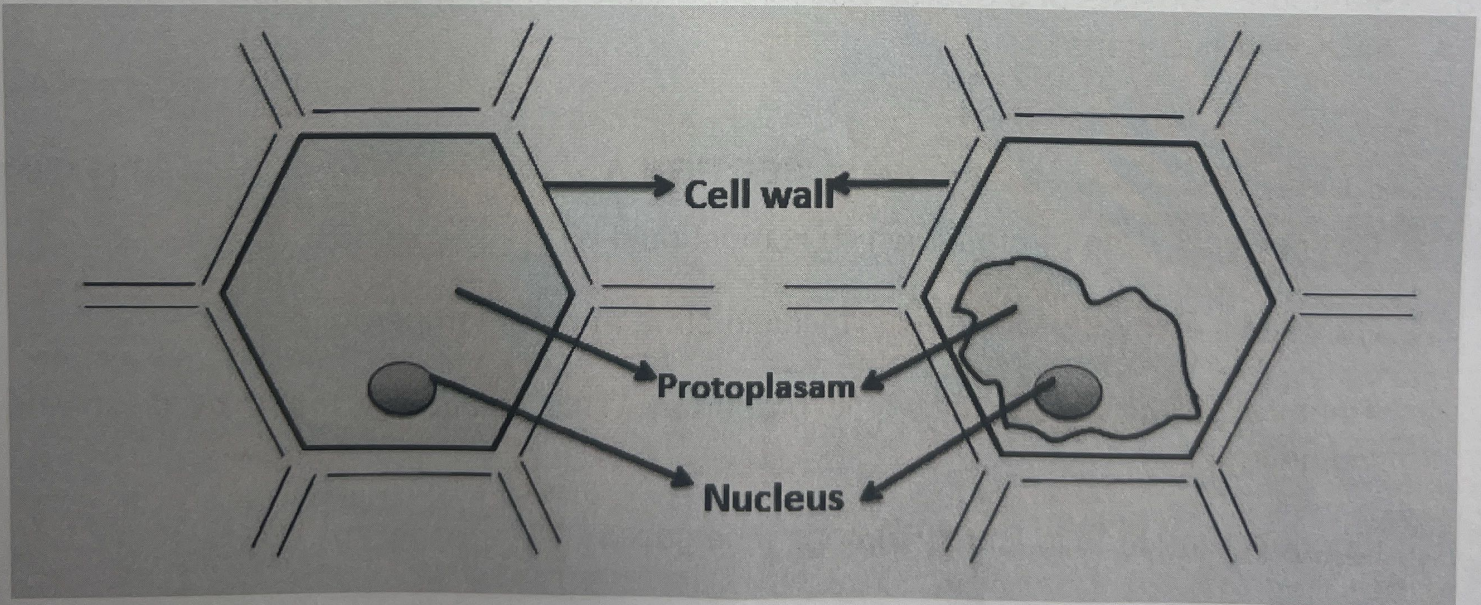
(1×20=20)

1. The physical state of matter which is most rigid is \_\_\_\_\_ . (1)
2. Name two elements which exist in liquid state at room temperature. (1)
3. Tincture of iodine has antiseptic properties. This solution is made by dissolving iodine in \_\_\_\_\_ . (1)
4. Suggest a method to liquefy atmospheric gases. (1)
5. Our palm feels cold when we put some acetone on it. What is the process taking place in this case? (1)

6. Some camphor was heated in a china dish as shown in the figure given below. Identify the method. (1)

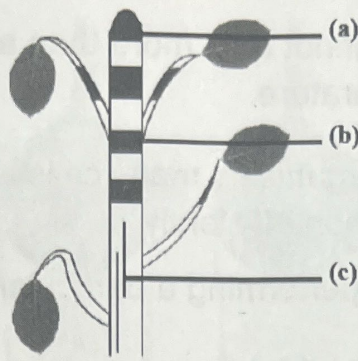


7. Milk is an example of the type of colloid known as \_\_\_\_\_. (1)
8. Define the phenomenon depicted in the image given below: (1)



9. Correct the following statement: (1)
- Functional segments of RNA are called genes.

10. Identify the part labelled as (b). Where is it located? (1)



11. Correct the following statement: (1)

The process of the meristematic tissue cells taking up a specific shape, size, feature to perform a specific function is known as a permanent tissue.

12. Correlate the organelle to its function: (1)

Column A	Column B
Endoplasmic reticulum	Synthesis of proteins
Ribosome	Cleansing the cell of infectious particles
Lysosome	

13. If an object's acceleration is zero, its speed must be \_\_\_\_\_ . (1)

14. When a running car stops suddenly, the passengers are jerked \_\_\_\_\_ . (1)

15. Fill in the blank: (1)

Cells of fungi can withstand very dilute mediums without bursting because the \_\_\_\_\_ exerts an equal pressure on the expanding cytoplasm.

16. Fill in the blank: (1)

In some desert plants the epidermis is covered with a thick waxy coating with water proof properties. The chemical making this layer is \_\_\_\_\_ .

The following questions from Question 17 to Question 20 consist of two statements -Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

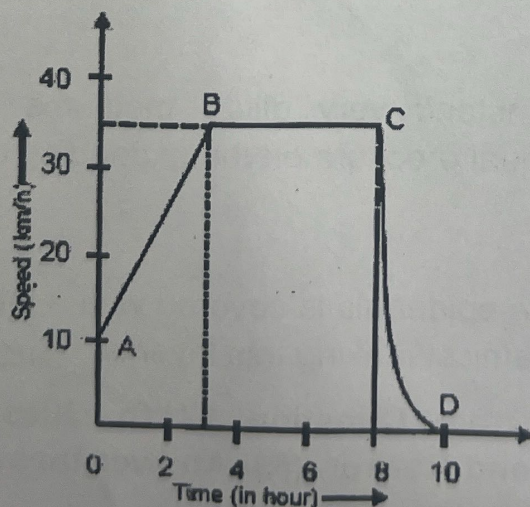
- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true and R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is False but R is true.
- (e) Both A and R are false.

17. **Assertion:** The rate of evaporation decreases with increase in humidity. (1)  
**Reason:** Air around us cannot hold more than a definite amount of water vapour at a given temperature.
18. **Assertion:** In multicellular organisms many cells are grouped together to perform a particular function efficiently. (1)  
**Reason:** A group of cells performing a particular function is called a tissue.
19. **Assertion:** The motion of an athlete moving along a circular path is an example of an accelerated motion. (1)  
**Reason:** If a body moves with a velocity of constant magnitude along a circular path, the change in his velocity is due to the change in the direction of motion.
20. **Assertion:** The cell membrane allows the movement of all substances in and out of the cell. It is selectively permeable. (1)  
**Reason:** Carbon dioxide moves into a cell during the process of respiration, by diffusion.

### SECTION B

(2×6=12)

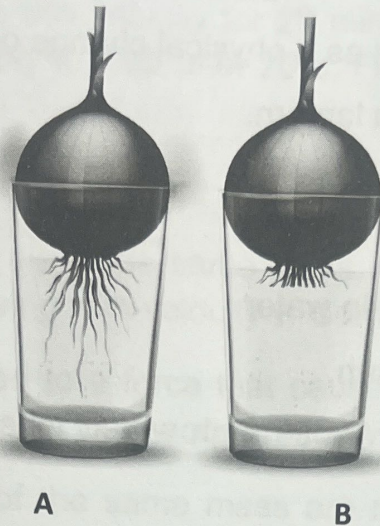
21. Define the term 'pure substance'. Give two examples. (2)
22. The graph given below shows how the speed of a car changes with time. (2)



- What is the initial speed of the car?
- What is the maximum speed attained by the car?
- Which part of the graph shows zero acceleration?
- Which part of the graph shows varying retardation?

23. Observe the following figure.

(2)



Both the onion bulbs are of the same size, yet the roots of bulb A are longer than those of bulb B. Why? Give reasons for your answer.

OR

Why do the cells of the cambium have a dense cytoplasm and a large nucleus?

24. What is momentum? Write its SI unit. Interpret force in terms of momentum. (2)

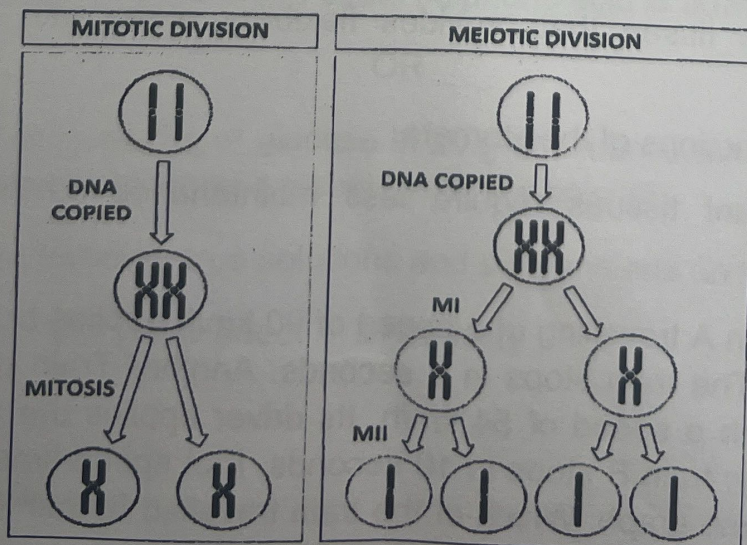
25. A car with a mass of 1200 kg moves in a straight line at a constant speed of 90 km/h. An unbalanced external force reduces its speed to 18 km/h in 4s. Calculate the acceleration. Also, calculate the magnitude of the force required. (2)

OR

When 15N force is applied on a body of mass  $m_1$ , acceleration produced is  $3\text{m/s}^2$ . Now, it is tied with a body of mass  $m_2$  and the same force is applied on a composite body and acceleration produced is  $2\text{m/s}^2$ . Find the mass of both the bodies.

26. Compare the two types of cell division shown below.

(2)



### SECTION C

(3×7=21)

27. Classify each of the following as a physical change or chemical change: (3)
- Burning of kerosene in a lantern.
  - Rusting of almirah.
  - Freezing of water.
  - Dissolving common salt in water.
  - Drying of a shirt in the sun.
  - Passing of electric current through water, thus, breaking it into hydrogen gas and oxygen gas.

28. a. A student added a small amount of common salt to water. Will there be any change in volume? Give reason. (3)
- b. Name the property of gases that helps aquatic plants and animals to survive in water.

OR

Give reason:

- A sponge is solid, yet it changes its shape on stretching. *compressing*
  - We can get the smell of perfume, sitting several metres away.
  - Steam produces more severe burns than boiling water at 100°C.
29. a. Illustrate the cell of a bacteria. State one basic difference between this cell and the cell of an onion peel. (1+1=2)
- b. What is membrane biogenesis? (1)
30. a. Illustrate the tissue that provides flexibility along with a little mechanical strength. (3)
- b. State two functions of the stomata.
- c. Why do plant tissues require less maintenance as compared to animal tissues?
31. The driver of train A travelling at a speed of 90 km/h applies brakes and retards the train uniformly. The train stops in 5 seconds. Another Train B is travelling on the parallel track with a speed of 54 km/h. Its driver applies the brakes and the train retards uniformly; train B stops in 10 seconds. Plot speed-time graphs for both the trains on the same graph. Which of the train travelled farther after the brakes were applied? (3)

32. A race car starts from rest and accelerates uniformly for 30 s to acquire a velocity of 108 km/h. It travels with this velocity for 20 min. The driver now applies brakes and the car retards uniformly to stop after 20 s. Find the total distance covered by the car. (3)

33. Answer the following questions: (3)

(a) Two objects, A and B, have the same mass. Object A is moving with velocity  $2v$ , and object B is moving with velocity  $v$ . Compare their momenta.

(b) If an object is subjected to a force that causes it to accelerate, how does its inertia change with respect to its acceleration?

(c) Two bodies A and B of the same mass are moving with velocities  $v$  and  $3v$  respectively. Compare their inertia.

#### SECTION D

(5×3=15)

34. The teacher demonstrated two activities. In the first activity, she mixed crushed iron fillings and sulphur powder together and labelled it as Sample 'A'. In the second activity, she heated the mixture of crushed iron fillings and sulphur powder strongly till red hot, cooled it and labelled it as Sample 'B'. (5)

a. What happens when a magnet is brought near the Sample 'A' and Sample 'B'?

b. What happens when carbon disulphide is added to the Sample 'A' and Sample 'B'?

c. What do you conclude from the above observations?

d. Is Sample 'A' homogenous or heterogenous? Justify.

e. Name the gas released when dilute sulphuric acid is added to 'Sample B'?

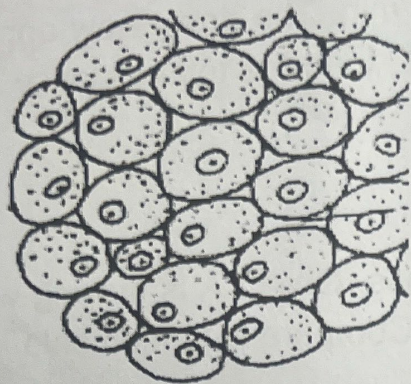
OR

a. A solution contains 5 g of glucose in 20 g of water. Calculate the concentration in terms of mass by mass percentage of the solution.

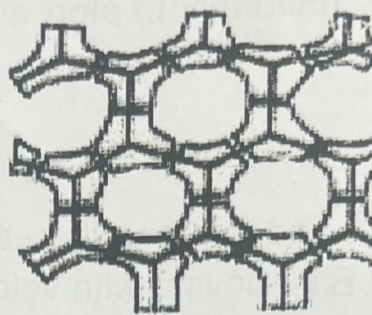
b. Differentiate between true solutions and suspensions on the basis of:

i. Filtrability    ii. Tyndall effect    iii. Stability

35. a. Given below are the images of two types of permanent tissues found in plants. (5)



A



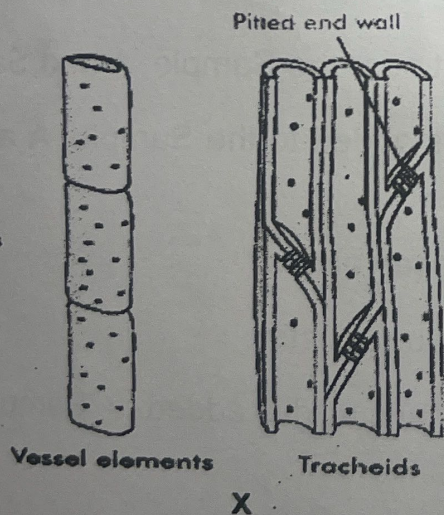
B

Identify and compare A and B on the basis of their (i) cell wall (ii) location (iii) function. (3)

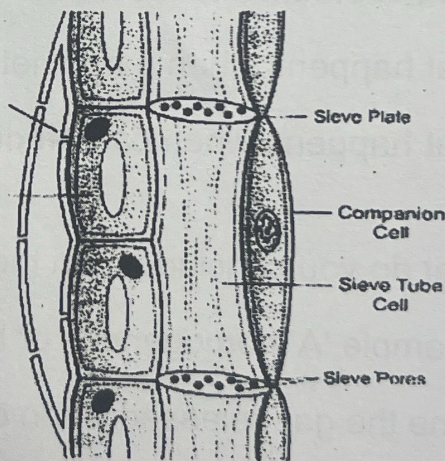
- b. What are the characteristics of the cork tissue? (1)
- c. Xylem and phloem are known as complex tissues. Why are they called complex? (1)

OR

a. Given below are the images of the two types of permanent tissues found in plants.



X



Y

Identify and compare X and Y on the basis of their (i) function (ii) nature of cells. (2)

- b. What is the characteristic feature of the tissue found predominantly in aquatic plants? What function does this tissue perform? (2)
- c. Why are there no intercellular spaces seen in the epidermal tissue? Give reasons for your answer. (1)



36. (a) State Newton's second law of motion. (5)
- (b) Why do fielders pull their hand gradually with the moving ball while holding a catch?
- (c) A body of mass 5 Kg starts and rolls down 32 m of an inclined plane in 4s. Find the force acting on the body?

OR

- (a) State Newton's third law of motion.
- (b) Explain why action and reaction forces in Newton's third law always occur in equal magnitude but opposite in direction.
- (c) A horse pulls a cart with a force of 500 N. The cart has a mass of 250 kg. Assuming no friction, calculate the acceleration of the cart. Describe the reaction force experienced by the horse and its effect.

**SECTION E**

**(4×3=12)**

37. Read the passage and answer the questions that follow: (4)

Solids have a definite shape, distinct boundaries and fixed volumes, that is, they have negligible compressibility. Solids have a tendency to maintain their shape when subjected to outside force. Solids may break under force but it is difficult to change their shape. Liquids take up the shape of the container in which they are kept. The liquefied petroleum gas (LPG) cylinder that we get in our home for cooking or the oxygen supplied to hospitals in cylinders is compressed gas. Compressed natural gas (CNG) is used as fuel these days in vehicles.

- a. A wooden table should be called a solid. Give reason.
- b. Liquids generally have lower density as compared to solids. But ice floats on water. Why?
- c. State the characteristic due to which large volumes of CNG can be filled into a small cylinder and transported easily.
- d. Arrange the following substances in increasing order of forces of attraction between the particles—water, sugar, oxygen.

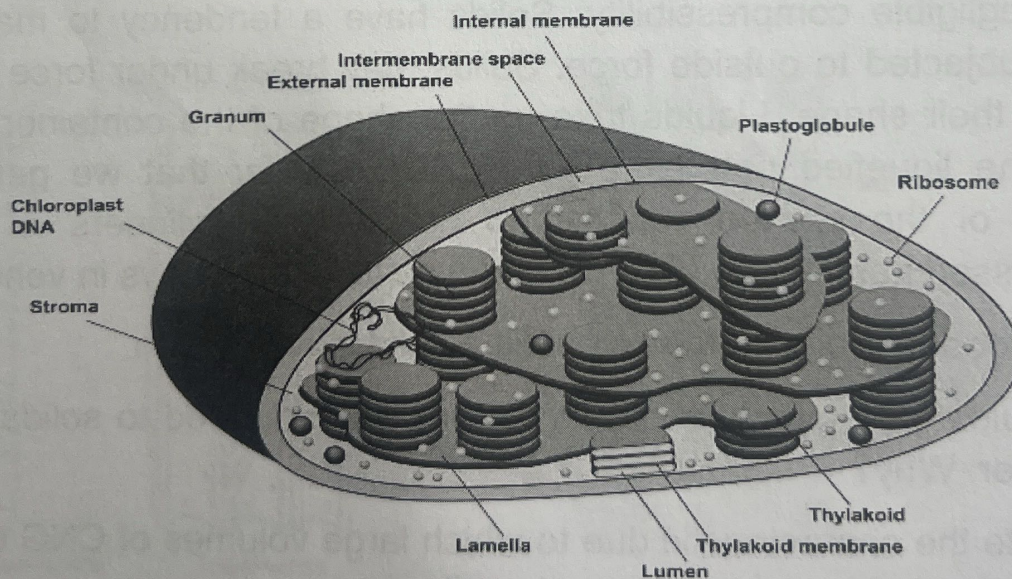
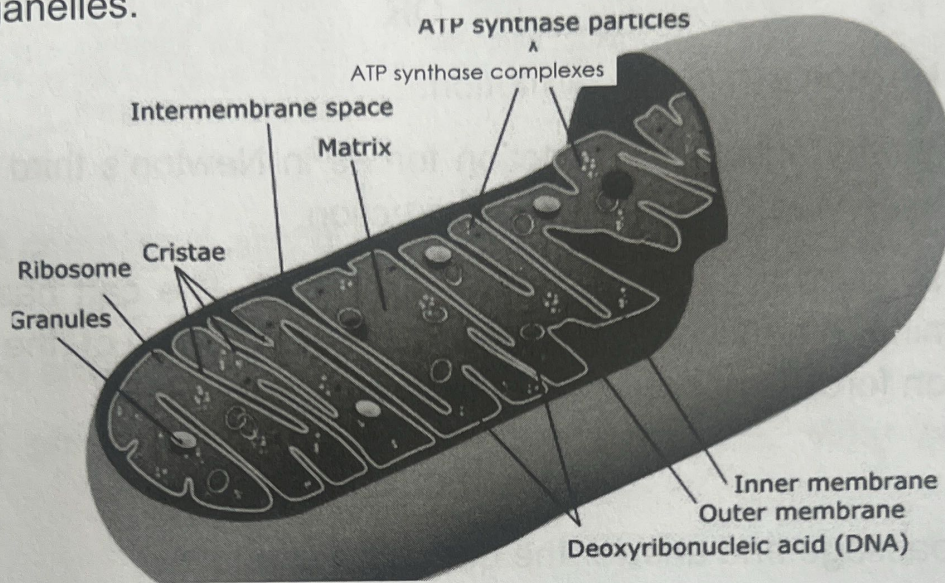
OR

d) Arrange the following in order of increasing density - air, honey, iron.

38. Read the passage and answer the questions that follow: (4)

Mitochondria and plastids are two types of membranous organelles seen in eukaryotes. Plastids are only found in plants and algae. Mitochondria generates energy for the cell in the form of ATP molecules using oxygen and nutrients.

Examples of plastids include chloroplasts; chromoplasts and leucoplasts. The Chloroplast is the site for photosynthesis in a plant cell. Mitochondria and plastids are unique among the cytoplasmic organelles in that they contain their own DNA, which encodes RNA and are able to synthesize some proteins. The organelles that contain their own DNA and can reproduce independently of the nucleus are said to be 'semi-autonomous organelles'. Both mitochondria and plastids are semi autonomous organelles.



- Why are mitochondria and Plastids unique organelles?
- Why are they called "semi autonomous"?
- What is the difference in the function of mitochondria and plastids?
- What is the similarity in the structure of mitochondria and plastids?

OR

Q What is the difference in the structure of the mitochondria and plastids?

39. Read the passage and answer the questions that follow:

(4)

The table given below shows distance (in cm) travelled by bodies A, B and C. Read this data carefully and answer the following questions.

Distance (in cm) covered by different bodies

TIME(s)	BODY A	BODY B	BODY C
1st Second	20	20	20
2nd Second	20	36	60
3rd Second	20	24	100
4th Second	20	30	140
5th Second	20	48	180

- (a) What is the speed of body A. Explain with calculations.
- (b) What type of speed does body B and C have?
- (c) Which of the bodies covers
- (i) maximum distance in 3rd second?
  - (ii) minimum distance in 3rd second?

OR

Draw a distance time graph for body C.