

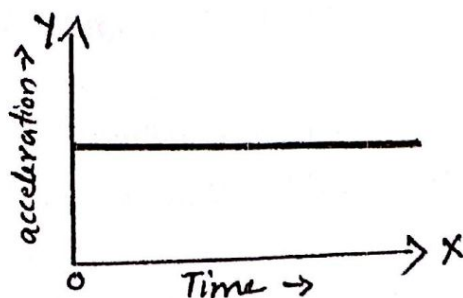
SECTION A

QUESTION 1

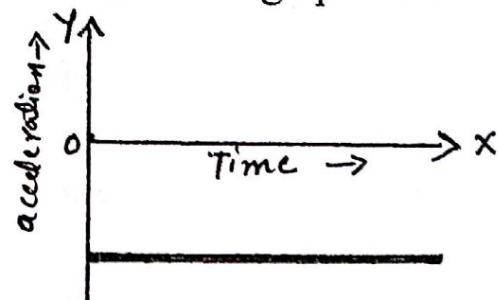
- a. i. What do you understand by the term uniform magnetic field?
- ii. Give an example for uniform magnetic field (2)
- b. State two advantages of an electromagnet over a permanent magnet (2)
- c. Why are ultrasonic sound used for cleaning the minute electronic components? (2)
- d. Define the term wave velocity? Give its SI unit (2)
- e. What is a neutral point? How is the position of neutral point located with the use of a compass needle? (2)

QUESTION 2

- a. i. When is a body said to be in motion?
- ii. Which of the quantity, velocity or acceleration determines the direction of motion (2)
- b. State the shape of displacement – time graph in the following cases
 - i. object is stationary
 - ii. object is in motion with non uniform velocity (2)
- c. Draw a velocity time graph for the free fall of a body under gravity, starting from rest ($g=10\text{m/s}^2$) (2)
- d. A body initially at rest, starts moving with a constant acceleration 2m/s^2 . Calculate:
 - i. The velocity acquired by the body
 - ii. The distance travelled by the body in 5s (2)
- e. What can you say about the velocity of motion in the graphs shown below



(i)



(ii)

QUESTION- 3

- a. State the effect of force applied on:
- a non rigid body
 - a rigid body (2)
- b. i. Name the factor on which inertia of a body depends
ii. State how does it depend on the factor stated by you (2)
- c. Why does a ball thrown vertically upwards in a moving train comes back to the thrower's hand (2)
- d. i. State Newton's third law of motion
ii. Give one application of the law (2)
- e. Calculate the gravitational force of attraction between the two bodies of masses 40 kg and 80 kg separated by a distance 15 m ($G=6.7 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$) (2)

QUESTION-4

- a. i. State and define SI unit of current
ii. Write an expression for the current in the conductor, if 'n' electrons flow through a cross section of a conductor in time 't' (2)
- b. Distinguish between a closed circuit and an open circuit with the use of suitable labeled diagram (2)
- c. Thick cables are used for electrical transmission. Explain the reason. (2)
- d. State the direction of electric current in a circuit
What is responsible for the flow of current through:
- a metallic conductor
 - an electrolyte (2)
- e. Give two examples for conductors and insulators of electricity (2)

SECTION B

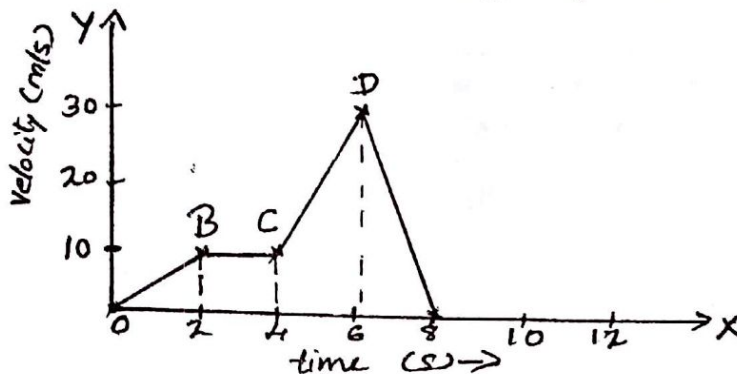
QUESTION 5

- a. i. Name the material used for making the armature of an electric bell
ii. How is the working of an electric bell affected, if alternating current be used instead of direct current (3)
- b. i. Explain why iron filings which are sprinkled on a sheet of cardboard over a bar magnet, take up a definite pattern when cardboard is slightly tapped (2)
ii. How can we measure the magnitude of magnetic field at a point? (1)
- c. How do the following factors affect, if at all, the speed of sound in air

- (i). frequency of sound (ii). Density of air (iii). Moisture in air
 (iv). temperature of air (4)

QUESTION 6

- a. State how the velocity-time graph can be used to find:
 (i). acceleration of a body (ii). The distance travelled by the body in a given time. (iii). The displacement of the body in a given time (3)
 b. Give the equations of motion for a body moving with a uniform retardation (3)
 c. The velocity-time graph of a moving body is shown below in fig.



- i. find the acceleration in parts BC and CD (2).
 ii. find total displacement (2)

QUESTION 7

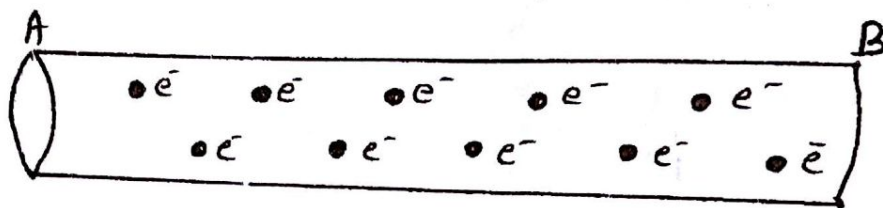
- a. i. An athlete prefers to land on sand instead of hard floor while taking a high jump. Give reason
 ii. which law is applicable in the case stated in (i) (3)
 b. i. How does the acceleration produced by a given force depend on mass of the body
 ii. Draw graph to show it (3)
 c. A ball is thrown vertically upwards from the top of a tower with an initial velocity of 19.6 m/s. the ball reaches the ground after 5s. calculate:
 i. the height of the tower
 ii. the velocity of ball on reaching the ground (4)

QUESTION-8

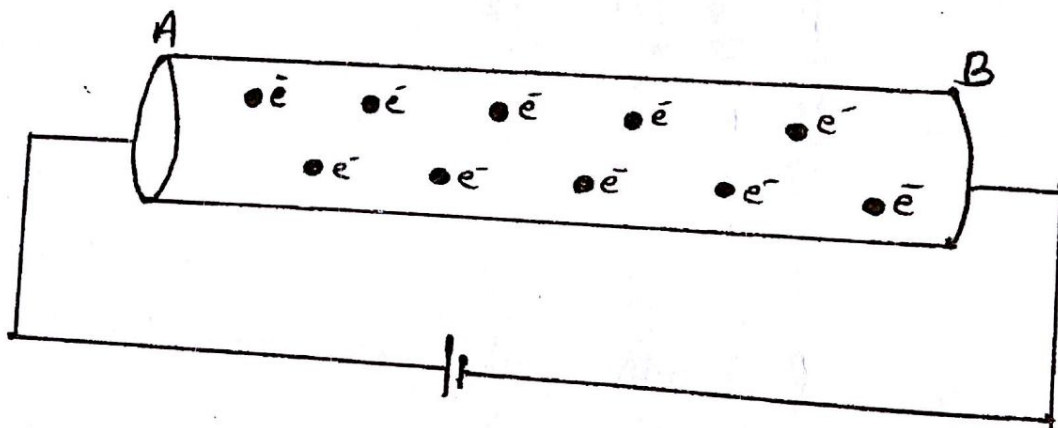
- a. Two conductors A and B are joined by a copper wire. State the direction of flow of electrons in each of the following cases
 i. If A is positively charged and B is uncharged

- ii. If A is negatively charged B is uncharged
- iii. If A is positively charged and B is negatively charged (3)
- b. i. What do you understand by the terms higher potential and lower potential (2)
- ii. How is the direction of flow of current between two charged conductors determined by their potentials (1)
- c. i. Does a metal wire when connected to a cell offer resistance to the flow of current? Justify your answer (2)
- ii. Show the direction of motion of electrons in the following fig (a) and (b)

conductor AB



(a)



(b)

(2)