

FIRST QUARTERLY EXAMINATION 2022-23

CLASS: IX

TIME: 2 HRS

SUBJECT: PHYSICS

MARKS: 80

Section - A (40 marks)

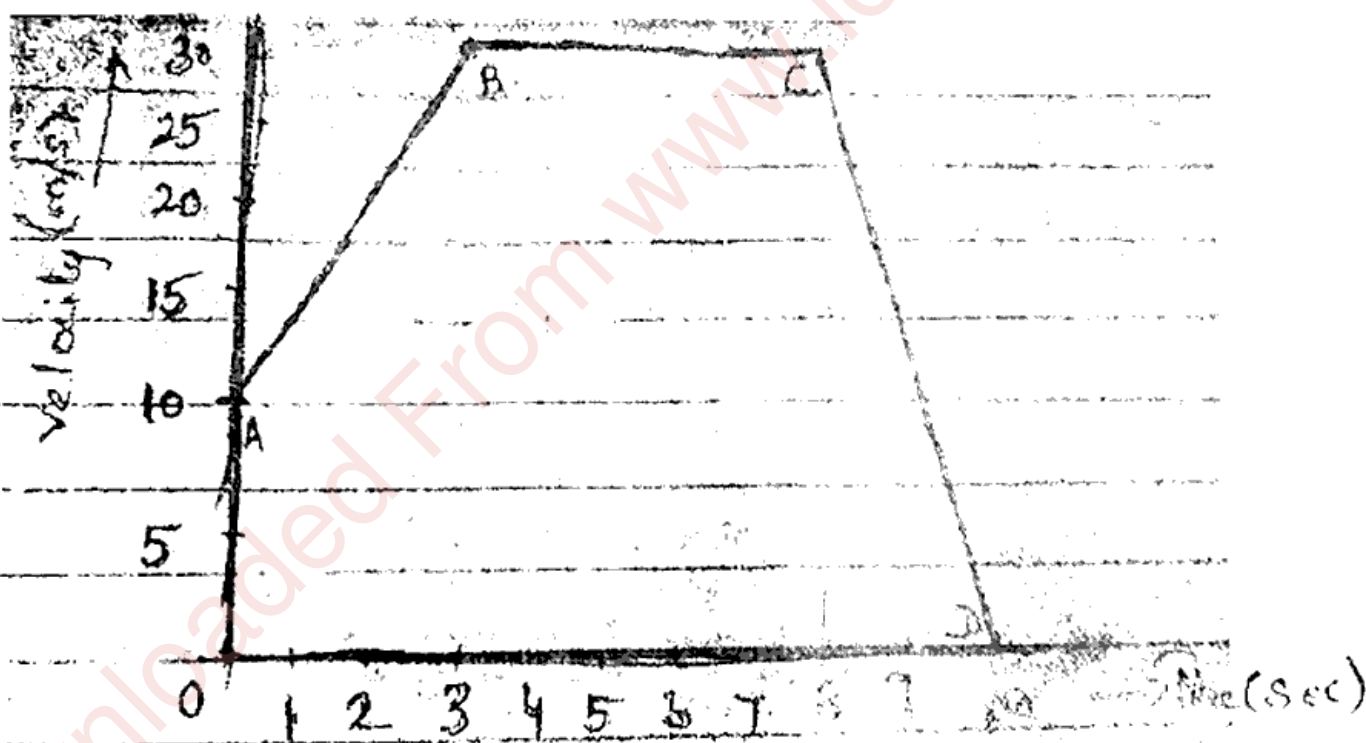
Attempt all the questions.

Q1. Define the following (5x2=10)

- Pitch of a screw gauge.
- Frequency and amplitude of a simple pendulum
- Slope of a velocity -time graph
- Inertia of motion
- Linear momentum with SI unit.

Q2. The given graph shows how the speed of a car changes with time.

(5x2=10)



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

- e) Find distance travelled in first 3 seconds?
- Q3. a) For 2 simple pendulums of same length with mass of bobs : $m_1 = 2\text{kg}$ and $m_2 = 4\text{kg}$. Find the ratio of their time periods (T_1/T_2)?
(5x2=10)
- b) Derive the relationship between SI and CGS units of force.
- c) What is normal reaction force ?
- d) A train travels a distance of 20 km with a uniform speed of 60 km/h ,If it travels another distance of 40km with a uniform speed of 80km/h .Calculate the average speed of train.
- e) A net force of 7500 N accelerates a car of mass 1500 kg . Uniformly from rest . Find its acceleration.
- Q4. a) Define the least count of an instrument . Give its value for screw gauge.
(5 x 2= 10)
- b) State 2 differences between mass and weight.
- c) Why do we get a forward jerk when we suddenly stop after jumping out from a moving bus?
- d) How force of gravitation changes if mass of each body is made doubled and distance reduced to half?
- e) Give 2 basic differences between g and G .

Section -B (40 Marks)

Attempt any 4 questions.

- Q5. a) Define mass of a body with SI unit. (3+3+4=10)
- b) A racing car has a uniform acceleration of 4m/s^2 .What distance will it cover in 10 seconds after the start?
- c) Derive second equation of motion graphically
- Q6.a) What is second's pendulum? What is its effective length?
(3+3+4=10)
- b) Calculate the momentum of a toy car weighing 200g and moving with velocity of 5m/s.
- c) State Newton's second law of motion and Derive the relation for force = massx acceleration.

c) The mass of a body is 90 kg on the surface of earth. What would be its weight when measured on the surface of moon .

Q8. a) Mass is the measure of inertia, give reason for this statement .
(3+3+4=10)

b) If weight of a body is 98 N what is its mass?

c) Explain why a karate player can break a pile of tiles in a single blow?

Q9. a) Define frictional force .
(3+3+4=10)

b) The earth attracts an apple . Does the apple also attract the earth, why does the earth not move towards the apple ?

c) Calculate the acceleration due to gravity when a spaceship is at a distance equal to twice the earth's radius from the center of the earth?

Q10. a) When a spring balance ,holding a mass is allowed to fall freely. What reading will it show? Give reason (3+3+4=10)

b) A stone is dropped from a height of 5m . Calculate it's final velocity just before touching the ground (take $g = 10 \text{ m/s}^2$).

c) State Newton's law of gravitation using this law, find the acceleration due to gravity on the surface of the Earth.

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