



Estd. 1861

BOYS' HIGH SCHOOL AND COLLEGE

FIRST TERM EXAMINATION (2025-26)

CLASS - IX

PHYSICS

TIME 2:00 Hours

MM: 80

Attempt All Questions from Section A and any Four Questions from Section B.

Section (A) (40 Marks)

[15]

Question.1

- (1) 1 Solar day = _____ Seconds.
 - (a) 80640
 - (b) 84600
 - (c) 86400
 - (d) 80064
- (2) 1 Century = _____ Years.
 - (a) 10
 - (b) 1000
 - (c) 100
 - (d) 10000
- (3) 1mg = _____ Kg.
 - (a) 10^{-2}
 - (b) 10^{-4}
 - (c) 10^{-6}
 - (d) 10^{-9}
- (4) The unit used to measure mass of a small amount of medicine.
 - (a) g
 - (b) mg
 - (c) kg
 - (d) Quintal
- (5) 15 ms^{-1} to kmh^{-1} is _____.
 - (a) 54 kmh^{-1}
 - (b) 45 kmh^{-1}
 - (c) 25 kmh^{-1}
 - (d) 52 kmh^{-1}
- (6) Which of the following is not a vector quantity?
 - (a) Velocity.
 - (b) Speed.
 - (c) acceleration.
 - (d) displacement.
- (7) A 4 kg object accelerates at 6 ms^{-2} . What is the net force acting on it.
 - (a) 42 N
 - (b) 14 N
 - (c) 41 N
 - (d) 24 N
- (8) A block is moving at constant velocity on a rough surface. What can be said about the net force on the block?
 - (a) Net force is Zero.
 - (b) Net force in the direction of motion.
 - (c) Net force is opposite to the direction of motion.
 - (d) Net force is equal to the weight of the object.
- (9) A man pushes a wall with a force of 100N. The wall does not move. The force exerted by the wall on the person is _____.
 - (a) 100 N is some direction.
 - (b) Zero
 - (c) 100 N is opposite direction.
 - (d) Positive.
- (10) A ray of light strikes a plane mirror at an angle of incidence of 45° . The angle between the incident ray and reflected ray is _____.
 - (a) 45°
 - (b) 90°
 - (c) 0°
 - (d) 180°
- (11) A convex mirror always forms an image that is:
 - (a) Real and inverted.
 - (b) Virtual and erect
 - (c) Enlarged and real.
 - (d) same size and real.
- (12) A ray of light parallel to the principal axis of a concave mirror reflects through the _____.
 - (a) Centre of Curvature.
 - (b) Principal axis
 - (c) Pole.
 - (d) focus
- (13) A car at rest accelerates at 2 ms^{-2} for 5 seconds. Its final velocity is _____.
 - (a) 1 ms^{-1}
 - (b) 10 ms^{-1}
 - (c) 0 ms^{-1}
 - (d) None of the above.
- (14) A passenger in a moving train tosses a coin which falls behind him. It means that motion of the train is.
 - (a) accelerated
 - (b) Uniform
 - (c) retarded
 - (d) along circular tracks.
- (15) What does the pitch of screw gauge reflect?
 - (a) Thickness of the screw.
 - (b) Area of its head.
 - (c) The distance travelled by screw in one complete rotation.
 - (d) The length of the threading on it.



Question-2

- (i) A car moving at 25 ms^{-1} comes to rest in 10 seconds find. [3]
- (a) The acceleration
- (b) The distance travelled before stopping.
- (ii) Differentiate between scalar and vector quantities. [2]
- (iii) Justify that mass, time, energy and temperature are scalar quantities. [2]
- (iv) Why does a boxer move his head backwards to minimize the effect of an oncoming punch. [2]
- (v) State two factors on which time period of a simple pendulum depends. [2]
- (vi) State the relations between the S.I unit CGS unit of force. [2]
- (vii) (a) Define least count of vernier caliper. [2]
- (b) Aperture.

Question-3

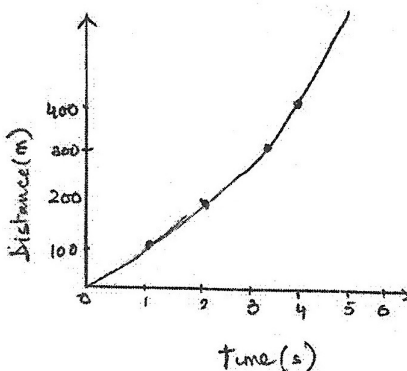
- (i) Draw a diagram to show the reflection of a ray of light from a plane mirror and indicate the following on it. [2]
- (a) Incident ray
- (b) Reflected ray
- (c) normal
- (d) angle of reflection
- (ii) Define inertia. Give one example of inertia of motion. [2]
- (iii) Distinguish between distance and displacement (write any two points). [2]
- (iv) What is meant by lateral inversion of an image in a plane mirror? Explain it with the help of a ray diagram. [2]
- (v) An automobile has a mass of 1500 kg. What must be the force between the vehicle and road if the vehicle is to be stopped with a negative acceleration of 1.7 ms^{-2} . [2]

SECTION B

Attempt any four questions (40 Marks)

Question-4

- (i) The following is the distance – time graph of an object in motion. [3]



- (a) Is the object accelerating?
- (b) What conclusion can you draw about the acceleration? Is it constant? Increasing? Decreasing? or Zero?
- (c) What do you infer about the forces acting on the object?
- (ii) (a) Explain why does a gun recoil when a shot is fired from it? [3]
- (b) Define momentum.
State its S.I. and cgs units.
- (iii) (a) A force of 5N acting on a body of mass ' m_1 ' produces an acceleration of 10 ms^{-2} and the same force acting on another body of mass ' m_2 ' produces an acceleration of 20 ms^{-2} . What acceleration would it give if both the masses were tied together? [4]

Question 5

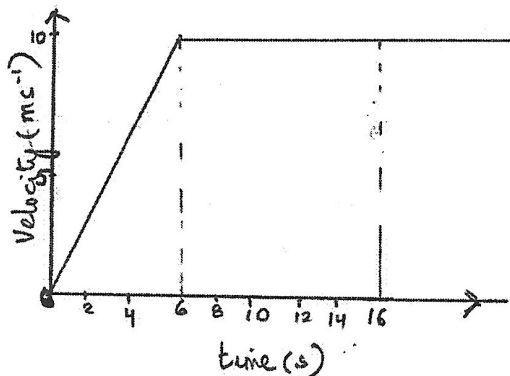
- (i) Derive an equation for the distance travelled by a body moving along a straight line with uniform acceleration. [3]
$$S = ut + \frac{1}{2} at^2$$
- (ii) What is acceleration due to gravity? [3]
What is its average value on the surface of earth?
Where is this value maximum and minimum?
- (iii) A farmer moves along a square field of 10 m in 40 seconds. What will the farmer magnitude of displacement be at the end of 2 minutes 20 seconds from his initial position. [4]

Question-6

- (i) Differentiate between Speed and Velocity. (3 Points) [3]
(ii) (a) State the universal law of gravitation. [3]
(b) Express it in a mathematical form.
(c) State the value of universal gravitation constant.
(iii) A car travels at a speed of 40 km hr^{-1} for two hours and then 60 km hr^{-1} for three hours. What is the average speed of the car for the entire journey? [4]

Question-7

- (i) Mention action and reaction force in the following cases:- [3]
(a) A person hammering the nail in the wall.
(b) The propelling of fish in water.
(c) The applying of brakes by a car in motion.
(ii) The mass of a goods lorry is 4000 kg and the mass of goods loaded in the lorry is $20,000 \text{ kg}$. If the lorry is moving with a velocity of 2 ms^{-1} , what will be the momentum? [3]
(iii) The velocity time graph of a runner is given in the graph. [4]



- (a) What is the total distance covered by the runner in 16 seconds?
(b) What is the acceleration of the runner at $t=11$ seconds?

Question-8

- (i) Fill in the gaps with appropriate answers regarding a concave mirror. [3]

Object Position	Image Position	Nature of Image
At centre of curvature		
Between pole and focus	At infinity	Image (rays are parallel)
At infinity		Real, inverted

- (ii) Explain with the help of a ray diagram that why does a convex mirror always forms Virtual, diminished image. [3]
(iii) An object 3 cm high is placed 30 cm in front of a concave mirror of focal length 15 cm . find [4]

- (a) Image distance.
(b) Image height.
(c) Nature of the image.

Question-9

- (i) State the function of the following parts:- [3]
(a) Circular scale in a screw gauge.
(b) External jaws of a vernier callipers.
(c) Vernier Scale of a Vernier Calliper.
(ii) What is a Zero error of a vernier calliper?
Name the two types of error. How can they be corrected? [3]

- (iii) A pendulum has a time period of 2.5 second and a length of 1.5 m . Find the value of 'g' at that location. (Take $\pi=3.14$). [4]
