

Instructions : Read the question paper carefully. Write neatly and legibly with correct question numbers. Do not over write. Check the answers before submitting the answer sheet

*Section A is compulsory. Attempt any four questions from Section B.
The intended marks for questions or parts of questions are given in brackets [].*

SECTION A


(Attempt all questions from this Section.)

Question 1

Choose the correct answers to the questions from the given options.

[15]

- (i) ly is the unit of :
a) time
b) length
c) mass
d) none of these
- (ii) The time period of a pendulum clock is
a) 1 s
b) 2 s
c) 1 min.
d) 12 h
- (iii) The fundamental unit is
a) newton
b) pascal
c) hertz
d) second
- (iv) A vector quantity is :
a) Work
b) pressure
c) distance
d) velocity
- (v) The correct equation of motion is :
a) $v = u + as$
b) $v = ut + a$
c) $s = ut + \frac{1}{2} at$
d) $v = u + at$
- (vi) The property of inertia is more in :
a) a car
b) a truck
c) a horse cart
d) a toy car
- (vii) The pressure inside a liquid of density ρ at a depth h is:
a) $h\rho g$
b) $h / \rho g$
c) $h\rho / g$
d) $h\rho$
- (viii) The linear momentum of a body of mass m moving with velocity v is :
a) v / m
b) m / v
c) mv
d) none of these
- (ix) According to the law of reflection :
a) $i/r = \text{constant}$
b) $\sin i / \sin r = \text{constant}$
c) $i + r = \text{constant}$
d) $i = r$
- (x) The image formed by plane mirror is :-
a) erect and diminished
b) erect and enlarge
c) inverted and of same size
d) erect and of same size

- (xi) For a uniformly retarded motion, the velocity time graph is: 
- a curve
 - a straight line parallel to the time axis
 - a straight line perpendicular to the time axis
 - a straight line inclined to the time axis
- (xii) What is the use of barometer ?
- voltage
 - water pressure
 - atmospheric pressure
 - none of these
- (xiii) In a barber shop, two plane mirrors are placed :
- Perpendicular to each other
 - parallel to each other
 - at an angle of 60° between them
 - at an angle of 45° between them
- (xiv) A real and enlarge image can be obtained by using a:
- convex mirror
 - concave mirror
 - plane mirror
 - either convex or plane mirror
- (xv) The focal length of a concave mirror is 15 cm. Find its radius of curvature.
- 20 cm
 - 5 cm
 - 45 cm
 - 30 cm

Question 2

- What is the slope of velocity time graph represents? [3]
- The separation between two masses is reduced to half. How is the magnitude of gravitational force between them affected? [2]
- Name the three system of unit and explain them. [2]
- What is lunar month? [2]
- Define the term:- (a) Amplitude , (b) Time period as related to simple pendulum. [2]
- What are the uses of barometer ? [2]
- Draw a ray diagram to show the formation of image by a concave mirror for an object placed between its center of curvature and focus. [2]

Question 3

- What are the differences between thrust and pressure. [2]
- What do you understand by atmospheric pressure ? [2]
- Define the term acceleration due to gravity and its value? [2]
- Name two kinds of Inertia with one example each. [2]
- Draw a ray diagram to show the formation of image by a concave mirror for an object placed beyond its centre of curvature. [2]

SECTION B

(Attempt **any Four** questions from this Section.)

- Q1) a)** How can newton's first law of motion be obtained from the second law of motion ? [3]
- b)** What are the differences between Mass and weight [3]
- c)** What is a simple pendulum ? Name two factors on which the time period of simple pendulum does not depend. [4]
- Q2) a)** What are the differences between Concave and convex mirror. [3]
- b)** A car travels first 30 km with a uniform speed of 60 km/h and then next 30 km with a uniform speed of 40 km/h . Calculate (i) the total time of journey (ii) the average speed of car. [3]
- c)** An object of length 4 cm is placed in front of a concave mirror at distance 30 cm. The focal length of mirror is 15 cm. (a) Where will the image form ? (b) What will be the length of image ? [4]
- Q3) a)** A force of 10N acts on a body of mass 2 kg for 3 s, initially at rest. Calculate: (i) the velocity acquired by the body and (ii) change in momentum of the body [3]
- b)** State Newton's first law of motion. What is meant by the term inertia ? [3]
- c)** An object of height 2 cm is placed at a distance 20cm in front of a concave mirror of focal length 12 cm. Find the position, size and nature of image. [4]
- Q4) a)** Write three characteristics of the image formed by plane mirror ?
What is meant by lateral inversion? [3]
- b)** State the laws of liquid pressure. [3]
- c)** State Newton's law of gravitation and importance of gravitation ? [4]
- Q5) a)** State three factors on which the pressure at a point in a liquid depends. [3]
- b)** State Newton's second law of motion with an example. [3]
- c)** A ball is released from a height and it reaches the ground in 3 sec. If $g = 9.8 \text{ m s}^{-2}$.
Calculate: (i) the height from which the ball was released,
(ii) the final velocity of the ball will strike the ground. [4]