

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  $\rho$  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: ~~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  $60^\circ$  between them
  - at an angle of  $45^\circ$  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

- (i) What is the slope of velocity time graph represents? [3]
- (ii) The separation between two masses is reduced to half. How is the magnitude of gravitational force between them affected? [2]
- (iii) Name the three system of unit and explain them. [2]
- (iv) What is lunar month? [2]
- (v) Define the term:- (a) Amplitude , (b) Time period as related to simple pendulum. [2]
- (vi) What are the uses of barometer ? [2]
- (vii) 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. <https://www.icseonline.com> [2]

### Question 3

- (i) What are the differences between thrust and pressure. [2]
- (ii) What do you understand by atmospheric pressure ? [2]
- (iii) Define the term acceleration due to gravity and its value? [2]
- (iv) Name two kinds of Inertia with one example each. [2]
- (v) 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]