

# HALF YEARLY EXAM-2019-20

## CLASS – IX PHYSICS

*Answers to this paper must be written on the paper provided separately .*

*You will not be allowed to write during the first 15 minutes.*

*This time is to be spent in reading the question paper.*

*The time given at the head of this paper is the time allowed for writing the answers.*

*Section I is compulsory. Attempt any four questions from section II.*

*The intended marks for questions or parts of questions are given in brackets. [ ]*

### Section-I(40 Marks)

MM:-80

#### QUESTION-1

- [a] The size of a particle is  $4.6\mu$  , Express it into metre. [2]
- [b] The wavelength of light of a particular colour is  $5200 \text{ \AA}$  express it in nm. [2]
- [c] Explain the meaning of term “ least count of an instrument by taking a suitable example. [2]
- [d] Write down comparison of mass and weight . [2]
- [e] Define thrust and state its SI. Unit. [2]

#### QUESTION-2

- [a] Select the scalars and vectors from the following velocity, work, distance, mass, force. [2]
- [b] What is a simple pendulum. [2]
- [c] Define frequency, oscillation, and the period. [2]
- [d] Express the speed  $36\text{km/h}$  in  $\text{m/s}$ . [2]
- [e] Calculate the length of a second pendulum at a place where  $g=9.8 \text{ m/s}^2$ . [2]

#### QUESTION-3

- [a] Define contact and Non contact forces with suitable examples. [2]
- [b] A force acts for 10 second on a body of mass 10 kg after which force ceases and the body covers 50 m in next 5 second. Find magnitude of force . [2]

- [c] Calculate magnitude of force when applied to a body of mass 0.5 kg produces an acceleration of  $4\text{m/sec}^2$  [2]
- [d] Define Newton's Laws of motion. [2]
- [e] Prove that  $1\text{ newton} = 10^5\text{ dyne}$ . [2]

### QUESTION-4

- [a] Discuss displacement time graph. [2]
- [b] A body starts from rest with a uniform acceleration of  $2\text{m/s}^2$ . Find the distance covered. [2]
- [c] A body of mass 7 kg is moving with velocity  $2\text{m/s}$ . Calculate its linear momentum. [2]
- [d] Define Distance and Displacement. [2]
- [e] Write down the three Equations of uniformly accelerated motion. [2]

## Section-II(40 Marks)

### Answer any four Question .

### QUESTION-5

- [a] A boy weighing 40 kgf is wearing shoes with heel of area of cross section  $20\text{cm}^2$  while a girl weighing 35 kgf is wearing sandals with heel of area of cross section  $1.5\text{cm}^2$ . Compare the pressure exerted on ground by their heels when they stand on the heel of one foot. [4]
- [b] State Pascal's Law of transmission of Pressure. [3]
- [c] Define Laws of Liquid Pressure. [3]

### QUESTION-6

- [a] Compare the time period of a simple pendulum at a place when  $g = 4.36\text{m/s}^2$ . [2]
- [b] Express  $15\text{ m/s}$  into  $\text{km/h}$ . [2]
- [c] A train moving with uniform speed covers  $120\text{m}$  in  $2\text{ sec}$ , calculate the speed of the train. [2]
- [d] The Linear momentum of a ball of mass  $50\text{gm}$  is  $0.5\text{ kg-m/s}$ . Find its velocity. [2]
- [e] A force of  $10\text{N}$  acts on a body of mass  $2\text{ Kg}$ , calculate its acceleration. [2]

### QUESTION-7

- [a] Write down equation of motion for a freely falling body . [4]
- [b] A stone at rest is dropped from a height and falls freely under gravity. Calculate the distance covered by it in the first two seconds ( $g=9.8 \text{ m/sec}^2$ ). [3]
- [c] Calculate the pressure due to a water column of height 100m ( $g=10\text{m/sec}^2$ ) and density of water  $=10^3\text{kg m}^{-3}$ ? [3]

### QUESTION-8

- [a] A body weighs 200gf in air and 190gf when completely immersed in water. Calculate: [4]
- (i) The loss in weight of the body in water.
- (ii) Upthrust on the body.
- [b] Differentiate between thrust and pressure . [3]
- [c] The weight of a body is 2 N . What will be its mass ? [3]

### QUESTION-9

- [a] Calculate the gravitational force of attraction b/w the two bodies of mass 40 kg and 80 kg separated by a distance 15 m  $G= 6.67 \times 10^{-11} \text{ N m}^2/\text{g}^{-2}$  [4]
- [b] A cube of each side 5 cm is placed inside a liquid the pressure at the centre of one face of cube is 10 pa. Calculate the thrust exerted by the liquid on this face. [3]
- [c] Differentiate between mass and weight. [3]

### QUESTION-10

- [a] A hammer exerts a force of 1.5 N on each of the two nails A and B. The area of cross section of tip of nail "A" is  $2\text{m}^2$  and of "B" is  $6\text{m}^2$ . Calculate Pressure on each nail. [4]
- [b] Prove that  $P=h\rho g$ . [3]
- [c] What factors affecting the pressure at a point in a liquid. [3]

