Time:2 Hr HALF YEARLY EXAMINATION (2020-2021) M.M:80

IX-PHYSICS

NOTE: Attempt all question from section A and any four questions out of six questions from section B

Section A (40 marks)

Q 1) [2×5=10]

(a) Name two units of time which are greater than the second and how they are related to S.I unit of time.
(b) A railway locomotive with a mass of 80 tonnes accelerates at a rate of 2 m/s^2 .What force does the engine of the locomotive exert?
(c) Why does a person fall off the back of a stationary horse if the horse starts running suddenly?
(d) Draw a graph to show that the variation in density of water with temperature in the temperature range from 273 K to 283 K.
(e) The time period of the vibration of the particles of a medium is 2×10^{-3} s and the wavelength of corresponding wave is 3 m. Find the speed of the wave in that medium.

Q 2) [2×5=10]

(a)Name any two effects of force applied to a non -rigid body

(b)Define momentum and state its S.I units.

(c)Define Newton's second law of motion.

(d)A person moves 10 m towards east and then 10 m towards north. Calculate his net displacement?

(e)What do you meant by measurement?

Q 3) [2×5=10]

(a)Name the S.I unit of heat. How is it related to the unit calorie?

(b) Name two substances which contract on heating.

(c) State two important properties of ultrasonic sound

(d)Why two persons can't talk on the moon?

(e)State relationship between g and G.

Q 4) [2×5=10]

(a) Write any two equations of motion in one dimension.
(b) State Physical Quantities measured by the following devices of a vehicle:
(i) Odometer (ii) Speedometer
(c) State any two difference between Scalars and Vectors.
(d) Define acceleration and state its S.I unit.
(e) Write any four Fundamental Quantity with their units.

Section B (40 Marks)

Q 5) [3+3+4=10]

(a) Write any three difference between distance and distance.
(b) State the S.I unit of: (i) force (ii) mass (iii)acceleration.
(c) An athlete is running around a track of square shape of side 10 m. He completes one round in 10 seconds. Calculate the distance and displacement covered by the athlete in 2 minutes.

Q 6) [3+3=4=10]

(a) State any three difference between speed and velocity.
(b) A car travels first 50 km with a constant speed of 30 km/h and next 40 km with a constant speed of 60 km/h. Calculate its average speed.
(c) A body is moving with the initial velocity of 20 m/s on a rough surface. The velocity of the body decreases at the rate of 0.4 m s^{-2} due to friction. After how much time will the body stop?

Q 7) [3+3+4=10]

(a) How can Newton's first law of motion can be obtained from the Newton' second law of motion?
(b) Name the S.I and C.G.S units of force. How they are related to each other?
(c) Draw graphs to show the dependence of:
(i) acceleration on force for a constant mass, and
(ii) force on mass for a constant acceleration.

Q 8) [3+3+4=10]

(a) Write any three difference between mass and weight.
(b) State three importance of Newton's Universal law of Gravitation.
(c) The force of attraction between two bodies at a certain separation is 72N. What will be force of attraction between them if the separation is reduced to (i) half (ii)one-third ?

Q 9) [3+3+4=10]

(a) State three properties of the medium for propagation of sound.
(b) Establish relationship between wave-length, wave -velocity and frequency of a transverse wave,
(c) Ocean waves of time period 10 s have wave velocity 15 m/s. Calculate:
    (i) The wave-length of these waves,
    (ii) the horizontal distance between a wave-crest and its adjacent wave-trough.

Q 10) [3+3+4=10]

(a) Write any three difference between heat and temperature.
(b) Draw a graph to show the variation in volume of water with temperature in the temperature range 0 ^{0}C to 10 ^{0}C.
(c) (i)What do you mean by anomalous expansion of water?
    (ii)At what temperature the density of water is maximum? State its value.