

UNIT TEST-1 (SESSION 2020-21)

Total Marks-25

Physics

Time

- Which of the following combination can never be a meaning full quantity? 1
(a) $PQ-R$ (b) PQ/R (c) $(P-Q)/R$ (d) $(PR-Q^2)/QR$
- If the error in the measurement of radius of a sphere is 2% then the error in the measurement of volume of the sphere will be 1
(a) 2% (b) 4% (c) 6% (d) 8%
- If $Z=A.B$ then show that $\Delta Z/Z = \Delta A/A + \Delta B/B$ 2
- The displacement of a particle is given by $x=(t-2)^2$ where x is in metre and t is in second. Find the distance covered by the particle in first 4 second. 2
- On the basis of dimensional analysis derive the expression of viscous force acting on a spherical ball when freely falling through a liquid 3
- A drunkard walking in a narrow lane takes 5 step forward and 3 step backward, followed again by 5 step forward and 3 step backward, and so on. Each step is 1 m long and requires 1s. Determine how long the drunkard takes to fall in a pit 22 m away from the start. 3
- Show that $S=ut + \frac{1}{2}at^2$ by graphical method. 3
- (a). Suppose we employ a system of units in which the unit of mass equal A kg, the unit of length B metre, the unit of time is C second. Find the magnitude of calorie in terms of the new units.
(b). How will you estimate the diameter of the thread by a metre scale. 5
- (a). A ball is dropped from a building of height 45 m. Simultaneously another ball is thrown up with a speed 40 m/s. Calculate the relative speed of the balls as a function of time.
(b). A police van moving with a speed of 40 km/h fires a bullet at a thief car of speed 192 km/h. If the muzzle speed of the bullet is 160m/s, with what speed does the bullet hit the car. 5