Class 11 Time : 1 hr.
12-5-2015 First Unit Test in PHYSICS M. Marks : 20

1. State the principle of homogeneity (1)

2. Write the dimensional formula of universal gravitational constant and pressure. (1)

3. Convert one joule of energy in to ergs using dimensional analysis. (2)

4. Check the dimensional accuracy of the following equation $h = \frac{2\sigma\cos\theta}{r\rho g}$.
   Where 'h' is capillary rise of liquid, σ, ρ, g and are surface tension, density, acceleration due to gravity and radius respectively. (2)

5. Write four limitation of dimensional analysis. (2)

6. Show that relative error in the product of two quantities is the sum of relative errors of the individual quantities. (2)

7. The radius of a sphere is measured by a screw gauge as r = (3.0 ± 0.1) cm. Calculate the percentage of error in the determination of volume of the sphere. (2)

8. Suggest two methods to reduce the errors during measurements in the lab. (2)

9. A particle moving in a circular path experiences centripetal force (F) which depends on the following physical quantities.
   (i) Mass of the particle (m)
   (ii) Speed of the particle (v) and
   (iii) Radius of the circular path (r).
   Derive an expression for centripetal force using dimensional analysis. (3)

10. Two resistances $R_1 = (6 \pm 0.2)\Omega$ and $R_2 = (3 \pm 0.6)\Omega$ are connected in parallel. Find the maximum percentage error in the combination. (3)

-x-x-x-x-x-