

## NCERT/CBSE PHYSICS CLASS 11 textbook

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Answers to NCERT/CBSE PHYSICS Class 11(Class XI)textbook Exercise and Additional exercise

CHAPTER TWO

UNITS AND MEASUREMENTS

EXERCISES

(For simplicity in numerical calculations, take  $g = 10 \text{ m s}^{-2}$ )

**2.14** A book with many printing errors contains four different formulas for the displacement

$y$  of a particle undergoing a certain periodic motion :

(a)  $y = a \sin 2\pi t/T$

(b)  $y = a \sin vt$

(c)  $y = (a/T) \sin t/a$

(d)  $y = (a/2) (\sin 2\pi t/T + \cos 2\pi t/T)$

( $a$  = maximum displacement of the particle,  $v$  = speed of the particle.  $T$  = time-period

of motion). Rule out the wrong formulas on dimensional grounds.

**Solution:**

Dimensions on the lhs°[L]

Now dimension on the rhs are:

(a)[L]

(b)[L]sin[L]

(c)[LT<sup>-1</sup>]sin[TL<sup>-1</sup>]

(d)[L]

Hence by principle of homogeneity of dimensions (b) and (c) are wrong.