

# Yakeen NEET 2.0 2026

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**KPP-11**

## Vectors

**Time limit 20 minutes**

1. Find D.F. of  $\alpha$  and  $\beta$ .

$$w = \frac{\alpha}{\beta} e^{-\frac{\alpha t}{k}}$$

$w \rightarrow$  Workdone

$k \rightarrow$  Boltzman const.

2. Find D.F. of  $\alpha$  and  $\beta$ .

$$w = \frac{\alpha}{\beta} e^{-\frac{\alpha t}{k\theta}}$$

$w \rightarrow$  Workdone

$k \rightarrow$  Boltzman const

$\theta \rightarrow$  temp.

3. Find D.F. of  $\alpha$  and  $\beta$ .

$$P = \alpha \left( 1 - e^{-\frac{k\theta}{\beta t}} \right)$$

$P \rightarrow$  Pressure

$k \rightarrow$  Boltzman const

$\theta \rightarrow$  temp.

4.  $U = k(1 - \cos ax)$

$U \rightarrow$  Potential energy

Find D.F. of  $\frac{a}{k}$

5.  $v = \sqrt{\frac{rkT}{m}}$

$v \rightarrow$  speed of sound

$r \rightarrow$  Dimension less

$k \rightarrow$  Boltzman const

$T \rightarrow$  temp

$m \rightarrow$  mass

Find SI unit of  $k$

6.  $b = \frac{ma}{k} \sqrt{1 + \frac{2kl}{ma}}$

$a \rightarrow$  acc

$l \rightarrow$  length

$m \rightarrow$  mass

D.F. of  $b$  will be?

(1)  $LT^{-1}$

(2)  $LT^{-2}$

(3) L

(4) Cannot be find

7.  $y = 2A \sin\left(\frac{2\pi ct}{\lambda}\right) \cos\left(\frac{2\pi x}{\lambda}\right)$

$y \rightarrow$  Displacement

$x \rightarrow$  distance

Find D.F. of  $ct$  and  $\frac{cx}{\lambda^2}$

8.  $\vec{F} = -\frac{A}{r^3} \vec{r}$

$F \rightarrow$  Force

$r \rightarrow$  Distance

Find D.F. of A

9.  $\vec{F} = -\frac{A}{r^3} \hat{r}$

$F \rightarrow$  Force

$r \rightarrow$  Distance

Find D.F. of A

10.  $\alpha = \frac{(\vec{r} \cdot \vec{a}) \hat{r}}{r^2}$

Find D.F. of  $\alpha$

11.  $\beta = \frac{(\vec{r} \cdot \vec{a}) \hat{r}}{r^2}$

Find D.F. of  $\beta$

12. If  $\alpha = \frac{1}{2\pi} \sqrt{\frac{P_0 A^2 r}{m V_0}}$

Where

$P_0 \rightarrow$  Pressure

$V_0 \rightarrow$  Volume

$A \rightarrow$  Cross section Area

$r \rightarrow$  Dimensionless

$m \rightarrow$  mass

If D.F. of  $AT$  is  $M^x L^y T^z$  where  $T$  is time then find.  
 $x + y + z$

13.  $F = \alpha x^2 + \beta \sqrt{t}$

Find D.F. of  $\frac{\beta^2}{\alpha}$

14.  $\alpha = \sqrt{\frac{hc^5}{G}}$

$c \rightarrow$  Speed of light

$h \rightarrow$  Plank const.

$G \rightarrow$  Univ. grav. Const

Find D.F. of  $\alpha$

15.  $x = \frac{F}{B} \sin(ct^2)$

$x \rightarrow$  Distance

$F \rightarrow$  Force

Find D.F. of  $A.B$

16.  $F = \frac{\alpha}{\beta + \sqrt{\rho}}$

$F \rightarrow$  Force

$\rho \rightarrow$  Density

Find D.F. of  $\alpha$  and  $\beta$

17.  $P = \alpha \log\left(\frac{\beta}{x^2} + rt^2\right)$

$P \rightarrow$  Power

Find D.F. of  $\frac{\alpha\beta}{r}$

