Q- An alternating waveform is given by the voltage as a function of time as

$$
V(t)=3 \cos (2 t)+4 \sin (2 t)
$$

Calculate the peak voltage, rms voltage and the phase at $\mathrm{t}=0$.

The function can be written as

$$
V(t)=3 \cos 2 t+4 \sin 2 t
$$

Or $\quad V(t)=\sqrt{3^{2}+4^{2}}\left(\frac{3}{5} \cos 2 t+\frac{4}{5} \sin 2 t\right)$
Or $\quad V(t)=5\left(\sin 37^{0} \cos 2 t+\cos 37^{\circ} \sin 2 t\right)$
Or $\quad V(t)=5 \sin \left(2 t+37^{0}\right)$

Hence the peak value of this voltage is $\mathrm{V}_{\mathrm{m}}=\mathbf{5}$ volt
The RMS value of the voltage is given by

$$
V_{r m s}=\frac{V_{m}}{\sqrt{2}}=\frac{5}{\sqrt{2}}=3.54 \mathrm{~V}
$$

And the phase angle at $\mathrm{t}=0$ will be $37^{\circ}$.

