4	Any correct trig function	B1
	$T_b + T_a \cos\theta = 8ma\omega^2$	M1A1A1
	$T_a \sin\theta = mg$	M1A1
	$T_b = 8ma\omega^2 - \dfrac{mg}{\sin\theta} \times \cos\theta$	dM1
	$8ma\omega^2 - \dfrac{mg}{\sin\theta}\cos\theta \leq \dfrac{5}{4}mg$	dM1
	$\omega^2 \leq \dfrac{g}{4a}$	A1
	$\omega = \dfrac{1}{2}\sqrt{\dfrac{g}{a}}$ o.e.	A1
		[10]

B1	$\sin\theta = \frac{4}{5}$ or $\cos\theta = \frac{3}{5}$ seen (or reversed if they have angle of string to vertical)
M1	Resolving horizontally, with two tensions (T_a resolved) and acceleration in either form.
A1	Both tensions correct
A1	Correct form of acceleration
M1	Attempt at vertical equation, with T_a resolved and weight not resolved
A1	Correct equation
dM1	Eliminate T_a. Dependent on both previous M marks.
dM1	Set $T_b \leq \frac{5}{4}mg$ to form inequality in ω^2. Trig need not be substituted. Dependent on previous M mark. Condone use of <
A1	Correct inequality for ω^2 Condone use of <
A1	$\omega = \frac{1}{2}\sqrt{\frac{g}{a}}$ o.e. Must have used ≤ for this mark.

ALT – for last 4 marks

	$8ma\omega^2 = T_b + \frac{mg}{\sin\theta} \times \cos\theta$	dM1
	$8ma\omega_{Max}{}^2 = \left(\frac{5}{4} + \frac{3}{4}\right)mg$	dM1
	$\omega_{Max}{}^2 = \frac{g}{4a}$	A1
	$\omega = \frac{1}{2}\sqrt{\frac{g}{a}}$ o.e.	A1

dM1	Eliminate T_a
dM1	Set $T_b = \frac{5}{4}mg$ to form and equation in $\omega_{Max}{}^2$ Some justification required that ω_{Max} will be when tension is greatest in PB. Trig need not be substituted.
A1	Correct expression for $\omega_{Max}{}^2$
A1	$\omega = \frac{1}{2}\sqrt{\frac{g}{a}}$ o.e.