

Answers

1 (b) 99.5 ms^{-1} (c)(i) $5.15 : 1$ (ii) $\sim 7.6 \text{ ms}^{-2}$ (iii) $\sim 3.9 \text{ ms}^{-2}$

2 (c)(i) $\frac{\omega_a}{\omega_e} = -\frac{B}{A}$ (ii) $T_e = 3T_a$; $T_f = 2T_a$ (iii) $P_e : P_f = 3 : 1$

3 (c) $k \geq 0.281 \sqrt[5]{\rho g l E} *^4$

4 (a) contact ratio = 1.67 single $R_{\min} = 6.62 \text{ mm}$; double $R_{\min} = 2.22 \text{ mm}$
 $\phi' = 20.64^\circ$, contact ratio = 1.51