Q3

a) Torque calculation:

D1:

$0.060 \times 500 = 30\ Nm$

D2: $0.040 \times 500 = 20\ Nm$

D3: $0.030 \times 500 = 15\ Nm$

Total Torque = $65\ Nm$

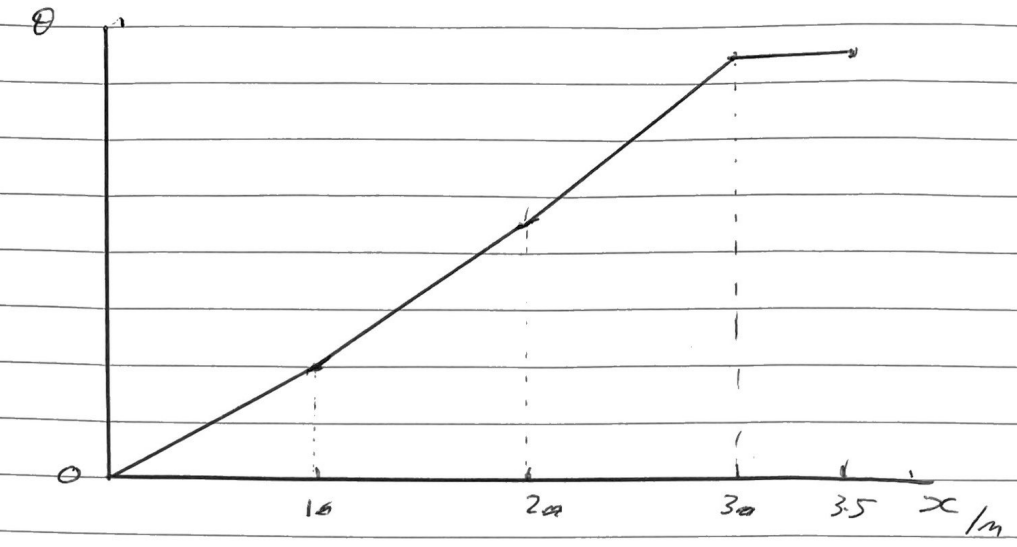
Power - Torque relation:

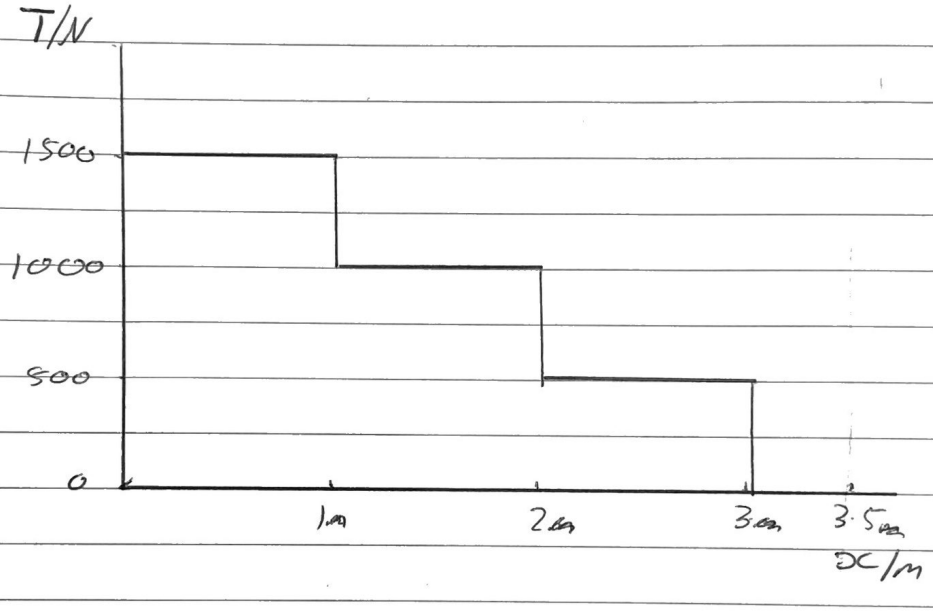
$P = T\omega$

$7 \times 10^3 = 65 \times \omega$

$\omega = 107.7\ rad\,s^{-1}$

b) $\frac{T}{J} = \frac{\tau}{r} = \frac{G\theta}{L}$


θ
0
1.0
2.0
3.0
3.5
x/m


T/N
1500
1000
500
0
1.0
2.0
3.0
3.5
x/m