

Solutions Pretest 3

$$\begin{aligned} 7. \quad \tau &= Fd_{\perp} \\ &= 40. \text{N} (70. \div 100) \text{m} \\ \tau &= 28 \text{Nm} \text{ cw} \end{aligned}$$

8. Fulcrum placed @ point A.

$$\begin{aligned} \Sigma \text{cwT} &= \Sigma \text{ccwT} \\ (26 \text{kg})(9.8 \frac{\text{m}}{\text{s}^2})(1.5 \text{m}) + (46 \text{kg})(9.8 \frac{\text{m}}{\text{s}^2})(2.5 \text{m}) &= F_B (1.0 \text{m}) \end{aligned}$$

$$F_B = 1509.2 \text{N} \uparrow$$

$$F_{\text{up}} = F_{\text{down}}$$

$$1509.2 \text{N} \uparrow = 254.8 \text{N} \downarrow + 450.8 \text{N} \downarrow + F_A$$

$$F_A = 803.6 \text{N} \downarrow$$

$$F_A = 8.0 \times 10^2 \text{N} \downarrow$$

$$F_B = 1.5 \times 10^3 \text{N} \uparrow$$

9. Fulcrum placed at X.

$$\Sigma \text{cwT} = \Sigma \text{ccwT}$$

$$40. \text{N} (0.50 \text{m}) + (20. \text{N})(1.5 \text{m}) + (10. \text{N})(2.5 \text{m}) = F_y (3.5 \text{m})$$

$$F_y = 21.42 \text{N} \uparrow \Rightarrow 21 \text{N} \uparrow \text{ (D)}$$