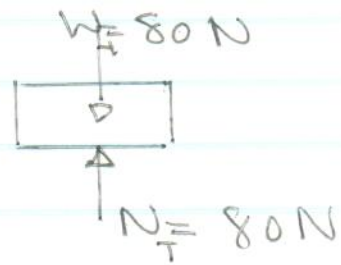
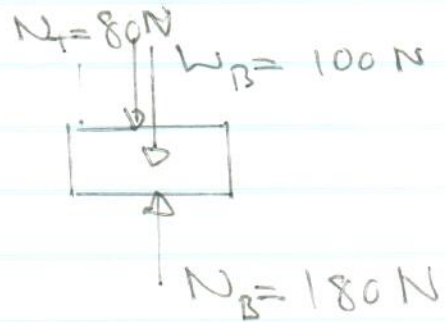


Exercise 7A

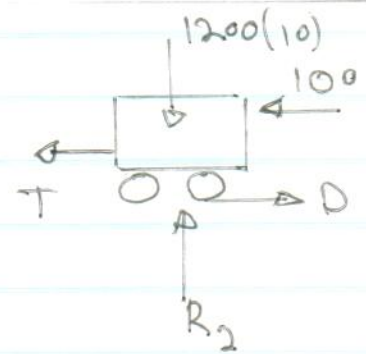
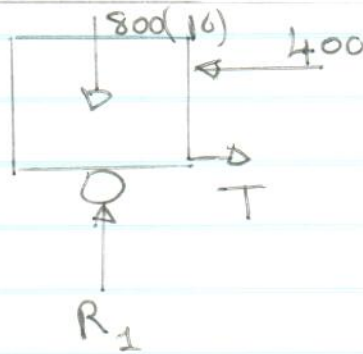
(1) Upper crate ( $W_T$ )



Lower crate ( $W_B$ )



(8)  $a = 0$



Caravan

$$\Rightarrow \Sigma F = ma$$

$$-400 + T = 800(0)$$

$$\therefore T = 400 \text{ N}$$

Car :  $\Rightarrow \Sigma F = ma$  :  $-T + D - 100 = 1200(0)$

$$\therefore -400 + D - 100 = 0$$

$$\therefore D = 500 \text{ N}$$

$a = -1,5 \text{ m s}^{-2}$

Caravan :  $\Rightarrow \Sigma F = ma$  :

$$\therefore -400 + T = 800(-1,5)$$

$$\therefore T = 800 \text{ N}$$

The car will be "pushed" by caravan

## Exercise 7 B

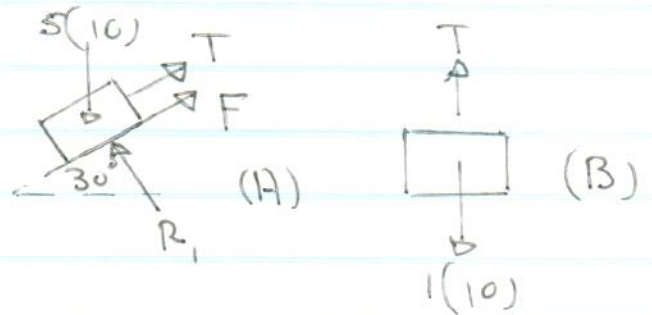
(1) (b)

(B)  $\uparrow \Sigma F = 0$

$$T - 1(10) = 0$$

$$T = 10 \text{ N } \uparrow$$

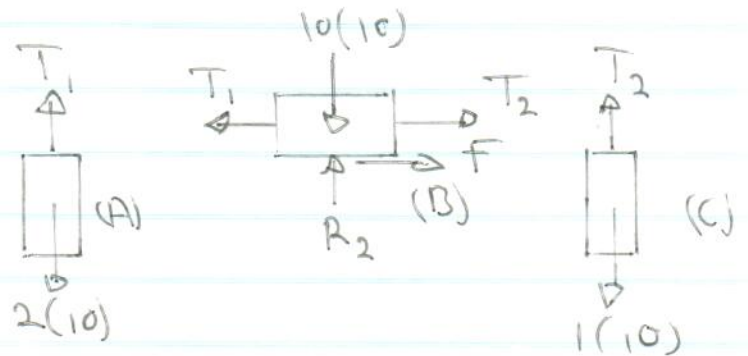
(A)  $\rightarrow \Sigma F = 0$  :  $5(10) \sin 30^\circ - T - F = 0$   
 $50 \sin 30^\circ - 10 - F = 0$   
 $\therefore F = 15 \text{ N } \rightarrow$



(C) (A)  $\uparrow \Sigma F_y = 0$

$$T_1 - 2(10) = 0$$

$$\therefore T_1 = 20 \text{ N } \uparrow$$



(C) (A)  $\Sigma F_y = 0$

$$T_2 - 1(10) = 0 \Rightarrow T_2 = 10 \text{ N}$$

(B)  $\rightarrow \Sigma F = 0$  :  $-T_1 + T_2 + F = 0$

$$-20 + 10 + F = 0$$

$$\therefore F = 10 \text{ N } \rightarrow$$

(3)

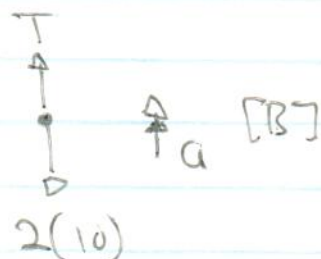
$$[A]: \downarrow \Sigma F = ma$$

$$-T + 3(10) = 3a$$

$$\therefore -T + 30 = 3a$$

$$\therefore T = 30 - 3a \quad \text{--- (1)}$$

$a \downarrow$



$$[B]: \uparrow \Sigma F = ma$$

$$\therefore T - 2(10) = 2a \quad \text{--- (2)}$$

Sub. (1) into (2):

$$30 - 3a - 20 = 2a$$

$$\therefore a = 2 \text{ m s}^{-2}$$

$$\therefore \text{From (1): } T = 30 - 3(2) = 24 \text{ N}$$