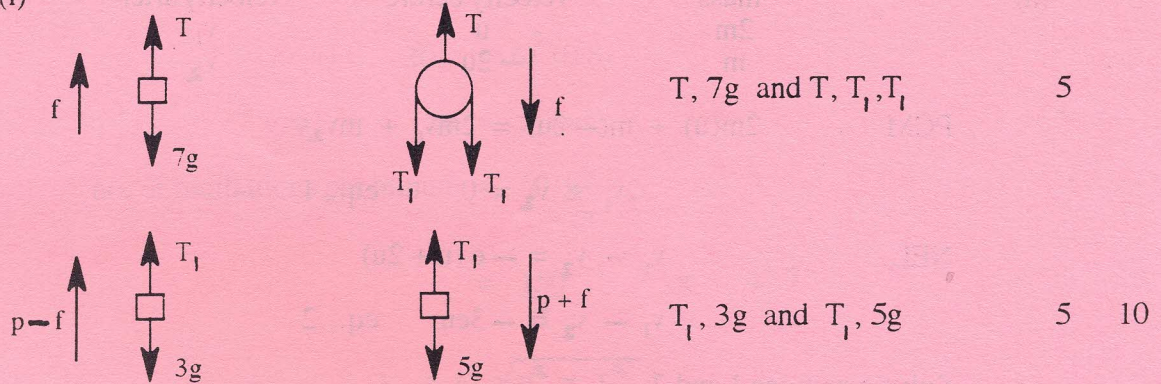


4 (i)



(ii)

$T - 7g = 7f$	}	$\Rightarrow$	$2T_1 - 7g = 7f$	eq...1	5
$2T_1 - T = 0$					5
$T_1 - 3g = 3(p - f)$		$\Rightarrow$	$5T_1 - 15g = 15p - 15f$		5
$5g - T_1 = 5(p + f)$		$\Rightarrow$	$15g - 3T_1 = 15p + 15f$		5

$$8T_1 - 30g = -30f \quad \text{eq...2}$$

Solve equations 1 and 2

 $\Rightarrow$

$$f = \frac{g}{29} \text{ or } 0.34$$

5

$$\Rightarrow T_1 = \frac{105g}{29} \text{ or } 35.5$$

$$\Rightarrow T = \frac{210g}{29} \text{ or } 71.0$$

$$\Rightarrow p = \frac{7g}{29} \text{ or } 2.4$$

5 30

(iii)

$$\left. \begin{array}{l} T - 7g = 7f \\ 2T_1 - T = 0 \end{array} \right\} \Rightarrow 2T_1 - 7g = 7f$$

$$T_1 - mg = m(p - f) = 0 \quad \text{when}$$

$$p = f$$

5

$$5g - T_1 = 5(p + f)$$

$$\Rightarrow 10g - 2T_1 = 20f$$

$$\Rightarrow f = \frac{g}{9}$$

$$T_1 = \frac{35g}{9} = mg$$

 $\Rightarrow$

$$m = \frac{35}{9} \text{ or } 3.9 \text{ kg}$$

5 10