Worksheet

(1) (c) 20 N

(2) $2f = 50 \times 5 = 250$

$f = \frac{250}{2} = 125 = 125g.$

Ans :- $125 \times g$

(3) $125 \times g$

Q:- Given that,

$m = 50 kg$

$a = 1.2 m/s^2.$

Now, we have,

$T - mg = ma$

$T = m(g + a)$

(a) The acceleration is upward :-

$T = m(g + a)$

$T = \frac{50}{100}(9.8 + 1.2) = 0.55 N.$

(b) The acceleration is upward but negative :-

$T = m(g - a)$

$T = \frac{50}{1000}(9.8 - 1.2) = 0.43 N.$

(c) The velocity is constant & therefore acceleration is 0 :-

$T = \frac{50}{1000} \times 9.8 = 0.49 N$

(d) The acceleration is downward:-

$T = \frac{50}{1000} \times (9.8 + 1.2) =$ ~~0.55N~~ 0.43N

(e) The acceleration is downward and negative:-

$T = \frac{50}{1000} \times (9.8 + 1.2) = 0.55N$

(f) The velocity is constant therefore acceleration is 0

:- $T = \frac{50}{1000} \times 9.8 = 0.49N$

a) (a) $T - mg = ma$

$T = m(g + a)$

$= 40(10 + 6)$

$= 640N$

Since, $T > T_{max}$, the rope will break in this case.

(b) $mg - T = ma$

$T = m(g - a)$

$= 40(10 - 4)$

$= 240N$

$\because T < T_{max}$, the rope will not break in this case.

(c) $T - mg = ma$

$T - mg = 0$

$T = mg$

$= 40 \times 10$

$= 400N$

$\because T < T_{max}$, the rope won't break in this case.

(d) $mg + T = mg$

$T = m(g - g) = 0$

$\because T < T_{max}$, the rope won't break in this case.

—x—