Physics
Quiz # 10

Tian Xiaoyang
26001904581

Q1.

(a)

The force in question is gravitational pull on the object. The object doesn't move in vertical position. The force doesn't do any work.

(b)

The force in question is gravitational pull on the object.
Component of the gravity that exerts along the surface:

$F_s = 100 \times \cos(\cos^{-1}\frac{3}{5}) = 60N$

$W_s = 60N \times 2 = 120J$

Q2.

(a)

$F_x = F \times \frac{4}{5}$

$F_y = F \times \frac{3}{5}$

$W = F_x \times s$

$= \frac{4}{5} \times 20 \times 1 \times \frac{1}{2} + \frac{4}{5} \times 20 \times 1$

$= 24J$

(b)

$-\left(\frac{1}{2}ks_2{}^2 - \frac{1}{2}ks_1{}^2\right) = -\left(\frac{1}{2}10(2)^2 - \frac{1}{2}10(3)^2\right) = 25J$

Q3.

(a)

$$KE = \frac{1}{2}mv^2$$
$$= \frac{1}{2}10(2^2)$$
$$= 20J$$

(b)

$$KE = \frac{1}{2}mr^2\omega^2$$
$$= \frac{1}{2}10 \times 3^2 \times 1.047^2$$
$$= 49.33J$$