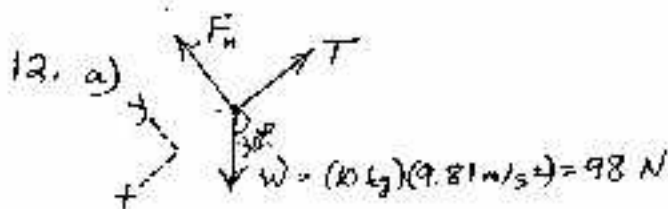


Answer Key

PHY 203 Exam 2

1. b 100N (Newton's 3rd)
2. c $\text{kg} \cdot \text{m}/\text{s}^2$ ($F = m \cdot a$)
3. c $600\text{N} / 9.81\text{m}/\text{s}^2 = 61.2\text{kg}$
4. d $k = F/\Delta x = 3F/\Delta x$ $\Delta x = 15\text{y}$
5. a $F_b = (10.0\text{kg})(9.81\text{m}/\text{s}^2) = (10.0\text{kg})(2.20\text{m}/\text{s}^2)$ $F_b = 120\text{N}$
6. b $a_c = v^2/R$ $a = (2v)^2/3R = (4v^2)/3R = \frac{4}{3}a_c$
7. d 4 (centripetal)
8. c $W_b = 2W_g = 2(1\text{W})(2\text{h}) = 4\text{W} \cdot \text{h} = (2\text{W})t$ $t = 2\text{h}$
9. a $\vec{F} \cdot \Delta\vec{s} = (2)(1) + (3)(2) + (4)(3) = 20\text{J}$
10. a $\frac{m}{2} v^2 = \frac{k}{2} (\Delta x)^2$ $v = 10 \times 1 \sqrt{k/m} = (0.05\text{m}) \sqrt{500\text{N}/\text{m} / 2.5\text{kg}} = 0.71\text{m}/\text{s}$

11. a) $\frac{10\text{kg}}{2} (4\frac{\text{m}}{\text{s}})^2 = 80\text{J}$
- b) $(10\text{kg})(9.81\text{m}/\text{s}^2)(3\text{m}) = 294\text{J}$
- c) $(80 + 294)\text{J} = 374\text{J}$
- d) $\sqrt{2(374\text{J})/10\text{kg}} = 8.65\text{m}/\text{s}$
- e) $\mu_k (10\text{kg})(9.81\text{m}/\text{s}^2)(5\text{m}) = 374\text{J}$ $\mu_k = 0.762$



- b) $98\text{N} \sin 30^\circ = 49\text{N}$
 $98\text{N} \cos 30^\circ = 85\text{N}$
- d) $49\text{N} / 10\text{kg} = 4.9\text{m}/\text{s}^2$
- e) $\mu_s 85\text{N} = 49\text{N}$ $\mu_s = 0.577$