Answer Key

1. D $(6+2)a = 2g \quad a=g/4$
2. A $F_s\text{-}mg = ma \quad F_s = 10(9.81+2.20) = 120\ N$
3. B $F_1+F_2+F_3 = 0 \quad F_3 = -3i-5j-7k+5i+2j+2k = 2i-3j-5k$
4. D $.08kg(.6m/s)/.16s = .3N$
5. B *around a curve and slowing*
6. C $\frac{1}{2}mv^2 = 10^5 J \quad v \rightarrow 1.2v$ gives $K \rightarrow (1.2)^2 \times 10^5 J = = 1.44 \times 10^5 J$
7. D $F_x = \sqrt{(45^2-12^2)} = 43.37 \quad (43.37N)(4m) = 173.5J$
8. B $1.5 \times 10^4\ kg(9.81m/s2)(25\ m)/6.0s = 6.13 \times 10^5 W$
9. D $450J+0J = 250J+(1.02)(9.81)h \qquad h = 20\ m$
10. C $10kg(9.81m/s^2)(5m \cdot sin37^o) = 295J$
11. A) $2kg(9.81m/s^2)(4.9m) = 96.14J$
    B) $\frac{1}{2}mv_B^2 = mgh \quad v_B = \sqrt{(2gh)} = \sqrt{(2(9.81)(4.9) = 9.085m/s}$
    C) $2(9.805)^2/4.9 = 39.24N$
    D) $T-2kg(9.81m/s^2) = 39.24N \quad T = 58.86N$