4U Physics : Review Problems - Part 2

Are you ready for the exam? – a few more problems to try….

1. A 64.3 kg person is standing in an elevator that is accelerating upwards at 2.02 m/s^2. Find the force of the elevator on the person.
2. A 35 kg person is riding on the Tower or Terror. The floor of the ride is exerting a force on the child of 238N. What is the acceleration of the child?
3. A 2.00 kg mass is spinning on a string at 4.00m/s in a vertical circle that has a radius of 50 cm. Find the tension in the string at the bottom and at the top of the circle.
4. An 8.00 kg mass is spinning on a cable at 22.0 m/s in a vertical circle that has a radius of 3.00m. Find the tension in the cable at the top and at the bottom of the circle.
5. If the 8.00kg mass is spinning at the same velocity and radius as in #5, but in a horizontal circle, find the tension in the cable.
6. A small moon is observed to be orbiting around Neptune every 2.63 hours at a radius from the centre of Neptune of 2.50×10^7m. given that $G=6.67 \times 10^{-11} Nm^2/kg^2$, find the mass of Neptune.
7. A 5.535 kg object breaks pops into three pieces and the three pieces fly off at the same level. A 2.235 kg piece goes off at 2.0m/s[E26.6°N], a 1.8kg piece goes off at 3.0m/s[E68.2°S]. Find the velocity of the third piece.

ANSWERS :

1. F=760N
2. a=3 m/s^2[down]
3. T_{top}=44.4N[down] T_{bottom}=83.6[up]
4. T_{top}=1212N[down] T_{bottom}=1369N[up]
5. T=1291N
6. $M=1.03 \times 10^{26}$kg
7. v=4.47m/s[W26.6°N] or v=4.47m/s[N63.4°W]