Written Question 11: Answers:
6 points:
1 point for mentioning that angular momentum is *constant* in this situation
1 point for mentioning that the reason angular momentum is *constant* is there are no external torques
1 point for referring to the L = I omega formula and pointing out that (if angular momentum is constant), I and omega are inversely proportional
2 points for mentioning that when the skater brings her arms in, rotational inertia goes *down* because mass is closer to her axis of rotation, and thus angular velocity goes *up* because the two are inverse proportional
2 points for mentioning that when the skater holds her arms out, rotational inertia goes *up* because mass is farther away from her axis of rotation, and thus angular velocity goes *down* because the two are inversely proportional

Written Question 12: Answers
3 points:
1 point for mentioning that angular momentum must be zero through this situation because nothing is spinning initially and there are no external toques
1 point for knowing that, inside the iPod, the hard drive begins spinning around when music is played.
1 point indicating that, for angular momentum to remain at *zero*, the iPod must begin spinning the opposite direction.

Bonus if you took the opportunity for a tirade against Apple slowing down old iPhones instead of simply allowing its customers to replace batteries.