Practice Multiple Choice—Linear Motion

30. A car accelerates from rest for 5 seconds until it reaches a speed of 20 m/s. What is the car's acceleration in meters per second per second?
    a. 1 .
    b. 2 .
    c. 3 .
    d. 4 .
    e. 5 .

31. Ten seconds after starting from rest, a car is moving at 40 m/s. What is the car's acceleration in meters per second per second?
    a. 0.25.
    b. 2.8.
    c. 4.0.
    d. 10.
    e. 40.

32. When a rock thrown straight upwards gets to the exact top of its path, its
    a. velocity is zero and its acceleration is zero.
    b. velocity is zero and its acceleration is about 10 meters per second per second.
    c. velocity is about 10 m/s and its acceleration is zero.
    d. velocity is about 10 m/s and its acceleration is about 10 meters per second per second.
    e. none of these.

33. A bullet is fired straight down from the top of a high cliff. Neglecting air resistance, the acceleration of the bullet in meters per second per second is
    a. less than 9.8.
    b. 9.8.
    c. more than 9.8.

34. A bullet is dropped from the top of the Empire State Building while another bullet is fired downward from the same location. Neglecting air resistance, acceleration is greatest for the
    a. fired bullet.
    b. dropped bullet.
    c. ...is 9.8 meters per second per second for each.

35. The muzzle velocity of a certain rifle is 100 m/s. Neglecting air resistance, at the end of one second a bullet fired straight up into the air will travel a distance of
    a. (100 - 4.9) m.
    b. (100 + 4.9) m.
    c. 100 m.
    d. 4.9 m.
    e. none of these.

36. A bullet is dropped into a river from a very high bridge. At the same time, another bullet is fired from a gun, straight down towards the water. Neglecting air resistance, the acceleration just before striking the water
    a. is greater for the dropped bullet.

b. is greater for the fired bullet.
c. is the same for each bullet.
d. depends on how high they started.
e. none of these.

37. Someone standing at the edge of a cliff throws one ball straight up and another ball straight down at the same initial speed. Neglecting air resistance, the ball to hit the ground below the cliff with the greatest speed will be the one initially thrown
a. upward.
b. downward.
c. they will both hit with the same speed.

38. A ball is thrown upwards. Neglecting air resistance, what initial upward speed does the ball need to remain in the air for a total time of 10 seconds?
a. 50 m/s.
b. 60 m/s.
c. 80 m/s.
d. 100 m/s.
e. 110 m/s.

39. A ball is thrown 125 meters upward and then falls the same distance back to earth. Neglecting air resistance, its total time in the air is about
a. 5 seconds.
b. 10 seconds.
c. 15 seconds.
d. more than 20 seconds.

40. A pot falls from a ledge and hits the ground 45 m below. The speed with which it hits the ground is about
a. 30 m/s.
b. 60 m/s.
c. 120 m/s.
d. more than 120 m/s.