Uniform Circular Motion Review

Question 1

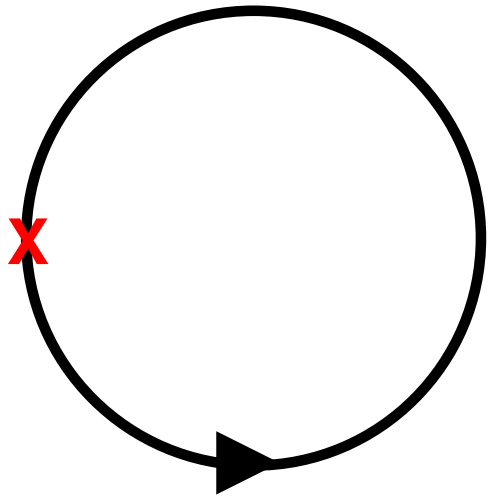
An object moving constantly in a circle is:

a) In equilibrium
b) Accelerating
c) Has an unbalanced force being exerted on it outward.
d) A and B
e) B and C

Question 2

An object is spinning in a circle from a string, if it is let go at point ‘X’ in which direction will it go?

a) Up
b) Down
c) Left
d) Right



Question 3

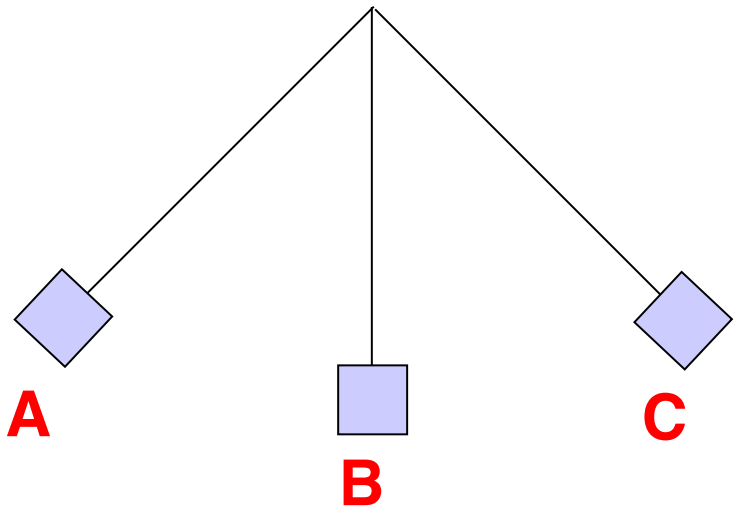
Which of these physical quantities are directed towards the center of the circular path that an object is moving?

a) Velocity
b) Acceleration
c) Unbalanced force
d) Speed
e) A and B
f) B and C

Question 4

In a pendulum, the force of the string on the block is LESS than the force of Earth on the block:

a) At point A only
b) At every point except B
c) At point C only
d) A and C
e) It is never less.



Question 5

Shelly is at the top of a rollercoaster peak (not a loop). Which of the following is true?

a) The $F_{Earth\text{-}on\text{-}Shelly} > F_{Seat\text{-}on\text{-}Shelly}$
b) The $F_{Earth\text{-}on\text{-}Shelly} < F_{Seat\text{-}on\text{-}Shelly}$
c) The $F_{Earth\text{-}on\text{-}Shelly} = F_{Seat\text{-}on\text{-}Shelly}$
d) None of the above

Question 6

Shelly experiences a g-force just as she's about to enter a loop. What is this?

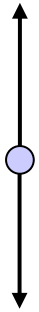
a) G-force is a measure of force exerted on Shelly
b) G-force is a change in the object's mass
c) G-force is a change in the object's force
d) G-force is a measure of acceleration
e) A and D
f) A and C

Question 7

Shelly is at the top of a loop-the-loop and feels “weightless” what force diagram shown matches this situation best?

a)

b)



c)

d)

Question 8

A planet is moving in an elliptical orbit, at it's furthest point away from the Sun, it is 3 times more distant then when it was close. How did the force of the Sun on the planet change from it's closest to farthest?

a) The $F_{Sun\text{-}on\text{-}Planet}$ decreased by 3
b) The $F_{Sun\text{-}on\text{-}Planet}$ decreased by 6
c) The $F_{Sun\text{-}on\text{-}Planet}$ increased by 9
d) The $F_{Sun\text{-}on\text{-}Planet}$ increased by 3
e) The $F_{Sun\text{-}on\text{-}Planet}$ decreased by 9

Question 9

Two objects are orbiting the Sun at the same distance. Object A is 10x times more massive than B. Compare the force exerted by the Sun on the objects.

a) The $F_{Sun\text{-}on\text{-}A}$ is x10 greater than $F_{Sun\text{-}on\text{-}B}$
b) The $F_{Sun\text{-}on\text{-}A}$ is x100 times greater than $F_{Sun\text{-}on\text{-}B}$
c) The $F_{Sun\text{-}on\text{-}A}$ is x10 less than $F_{Sun\text{-}on\text{-}B}$
d) The $F_{Sun\text{-}on\text{-}A}$ is x100 less than $F_{Sun\text{-}on\text{-}B}$
e) None of the above.

Question 10

Kepler's 1st law says that:

a) An imaginary planet-sun line sweeps out equal areas in equal intervals of time.
b) A planet moves in an ellipse around the Sun
c) The Sun is located at the center of a planet's elliptical path.
d) The Sun is located at one focus of a planet's elliptical path.
e) B and C
f) B and D

Question 11

Kepler's 3rd law says that:

a) The square of the ratio of two planet's distance from the Sun is equal to the cube of the ratio of the two planet's periods.

b) The square of the ratio of two planet's periods is equal to the cube of the ratio of the two planet's distance from the Sun.

c) The cube of a planet's period is directly proportional to the square of the planet's distance from the sun