Practice Quiz 8

1) Newton discovered
   A) gravity.
   B) that gravity is universal.
   C) neither
   Answer: B

2) What is the force of gravity on a 500-newton woman standing on the Earth's surface?
   A) 50 N
   B) 250 N
   C) 500 N
   D) 5000 N
   E) none of these
   Answer: C

3) The Earth's gravitational field extends
   A) only above and beyond the Earth's surface and cancels inside the Earth.
   B) both inside and outside the Earth and throughout the entire universe.
   C) neither of these
   Answer: B

4) A black hole is
   A) an empty region of space with a huge gravitational field.
   B) a small region that contains the mass of many galaxies.
   C) simply the remains of a giant star that has undergone gravitational collapse.
   Answer: C

5) Consider two planets in space that gravitationally attract each other. If the masses of both planets are doubled, and the distance between them is also doubled, then the force between them is
   A) one quarter.
   B) half as much.
   C) twice as much.
   D) four times as much.
   E) none of these
   Answer: E

6) If the Earth's mass decreased to one-half its original mass with no change in radius, then your weight would
   A) decrease to one quarter your original weight.
   B) decrease to one half your original weight.
   C) stay the same.
   D) none of these
   Answer: B

7) The amount of gravitational force that acts on the space shuttle while in orbit is
   A) nearly zero.
B) almost as much as the shuttle's weight on the Earth's surface.
C) the same as the shuttle's weight on the Earth's surface.
Answer: B

8) Two objects move toward each other because of gravity. As the objects get closer and closer, the force between them
A) increases.
B) decreases.
C) increases, then decreases.
D) decreases, then increases.
E) remains constant.
Answer: A

9) When the distance between two stars decreases by half, the force between them
A) decreases by one-quarter.
B) decreases by one-half.
C) increases to twice as much.
D) increases to four times as much.
E) stays the same.
Answer: D

10) If you drop a stone into a hole drilled all the way to the other side of the Earth (neglect the molten core), the stone will
A) come to an abrupt stop at the center of the Earth.
B) speed up until it gets to the center of the Earth.
C) speed up until it reaches the other side of the Earth.
D) slow down until it reaches the center.
Answer: B

11) Inside a freely falling runaway elevator, your
A) acceleration is zero.
B) apparent weight is zero.
C) gravitational interaction with the Earth is zero.
D) all of these
E) none of these
Answer: B

12) The reason the moon does not crash into the Earth is that the
A) Earth's gravitational field is weak at the moon.
B) gravitational pull of other planets keeps the moon up.
C) moon has a sufficient tangential speed.
D) moon has less mass than the Earth.
E) none of these
Answer: C

13) The Earth is currently accelerating toward the sun (centripetal acceleration). If the sun collapsed into a black hole, this acceleration would
A) increase.
B) decrease.
C) stay the same.
D) cease to exist.
Answer: C

14) When a star collapses to form a black hole, its mass
A) increases.
B) decreases.
C) remains the same.
Answer: C

15) If the sun somehow became twice as massive, your weight as normally measured here on Earth would
A) double.
B) quadruple.
C) not change.
Answer: C

16) Each of us weighs a tiny bit less inside the ground floor of a skyscraper than we do on the ground away from the skyscraper. The reason for this is the
A) gravitational field is shielded inside the building.
B) mass of the building attracts us upward slightly.
C) both of these
D) none of these
Answer: B

17) Which pulls on the oceans of the Earth with the greater force?
A) the moon
B) the sun
C) Both pull the same.
Answer: B

18) Tidal forces in general are the result of
A) two or more sources of gravitation.
B) a combination of any kind of forces acting on a body.
C) unequal forces acting on different parts of a body.
D) the inverse-square law.
E) unequal fluid flow.
Answer: C