PHY 102 MOD 4 Exam Name Aalicia Tucker
30 Questions
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HIGLIGHT THE SINGLE CORRECT RESPONE

1. Which of the following activities best illustrates the practices of the scientific method?
   a. Deciding on the materials necessary to build a terrarium.
   b. Following the instructions to construct an electric generator.
   c. Measuring the time for an object to fall from different heights.
   d. Designing an electric circuit for a radio.

2. What cannot be the outcome of a science experiment?
   a. A theory is supported.
   b. A theory is disproven.
   c. A theory is proven.
   d. A theory is further refined.

3. A truck makes a sharp turn and a box falls out of the truck bed. This is best explained using:
   a. the law of inertia.
   b. Newton's second law of motion.
   c. the law of action and reaction.
   d. Newton's third law of motion.

4. If an object increases its speed by the same amount each second, its acceleration:
   a. also increases each second.
   b. is constant.
   c. decreases each second.
   d. can either increase or decrease depending on the circumstances

5. Which of the following is NOT a part of the scientific method?

a. Making a guess about the possible outcome.

b. Perform experiments to test the predictions.

c. Organize and analyze the data collected.

d. Repeating a measurement until you get the desired result.

e. Formulating a rule based on the experimental results.

6. Consider a basketball player making a jump shot. Once the player's feet leave the floor, the player's acceleration:

a. depends on the speed of the player.

b. depends on the forward motion of the player.

c. depends on the athletic ability of the player.

d. is equal to 10 m/s^2.

7. The acceleration of an object is caused by:

a. a change in speed.

b. a change in velocity.

c. a change in direction.

d. an unbalanced force.

8. Which of the following describes an accelerated motion?

a. Driving uphill at a constant speed.

b. Driving downhill at a constant speed.

c. Driving around a circle at a constant speed.

d. Driving on a straight road at a constant speed.

9. A ball is placed at the top of a hill and then released. After 5 seconds it has a speed of 20 m/s. What is the average acceleration of the ball?

a. 10 m/s^2

b. 0 m/s^2

c. 100 m

d. 5 m/s^2

e. 4 m/s^2

10. A circus performer with a weight of 700 N hangs from the middle of a bar supported by a vertical rope at each end. What is the tension force in each rope?

a. 700 N

b. 1400 N

c. 350 N

d. 1050 N

e. 0 N

11. Which object has the greatest momentum?

a. A truck parked on the street.

b. A man walking up a flight of stairs.

c. A race car going around a turn at high speed.

d. A bicyclist rolling downhill.

e. A salmon swimming upstream.

12. Which of the following has the greatest density?

a. A 10 g object with a volume of 10 cubic centimeter.

b. A 40 g object with a volume of 20 cubic centimeter.

c. A 20 g object with a volume of 5 cubic centimeter.

d. A 10 g object with a volume of 2 cubic centimeter.

13. A 12 kg box is pulled across the floor with a 48 N horizontal force. If the force of friction is 12 N, what is the acceleration of the box?
    a. 3 m/s2
    b. 5 m/s2
    c. 10 m/s2
    d. 1 m/s2
    e. 4 m/s2

14. A satellite orbits the earth in a circle with constant speed. Which of the following is true?
    a. The net force on the satellite is zero because the satellite is not accelerating.
    b. The net force on the satellite is directed forward, in the direction of travel.
    c. The net force on the satellite is directed straight down, toward the Earth.
    d. The net force on the satellite is directed outward, away from the Earth.

15. Power is:
    a. the same as energy.
    b. the same as work.
    c. the rate at which a force is applied.
    d. the rate at which work is done.

16. What is the purpose of airbags in modern cars?
    a. They alert the police that a collision happened.
    b. They decrease the time of impact in a collision.
    c. They protect the car from being damaged during a collision.
    d. They decrease the force of impact on the driver and the passengers during the collision.

17. Two marbles are released to roll down two frictionless ramps. One marble rolls down a short, steep ramp and the other marble rolls down a long, flat ramp. If they are released from the same heights, how will the speeds at the bottom of the ramps compare?

a. The marble rolling down the short, steep ramp will have the greatest speed.

b. The marble rolling down the long, flat ramp will have the greatest speed.

c. They will have the same speed at the bottom of the ramps.

d. There is not enough information to tell.

18. Consider a basketball. In which situation will the basketball have the greatest buoyant force?

a. When the basketball is floating on a lake.

b. When the basketball is held under the surface of a pool.

c. When the basketball is placed on the ground.

d. When the basketball is thrown high into the air.

19. A 3 kg cart moving with a speed of 4 m/s collides with a 1 kg cart at rest. If the carts stick together after the collision, with what speed will they move after the collision?

a. 3 m/s

b. 4 m/s

c. 2 m/s

d. 1 m/s

20. A 50 kg man is stepping to the right out of a 20 kg boat that has not yet been tied to the dock. He is thinking he will step onto the dock. What is most likely to happen?

a. The man will move a small distance to the right and the boat will move a larger distance to the left.

b. The man will move to the right while the boat will stay in place.

c. The boat will move to the left while the man will stay in place.

d. The boat will move the same distance to the left as the man will move to the right.

e. The boat will move a small distance to the left and the man will move a larger distance to the right.

21 During which phase change is heat absorbed?

a. Condensation

b. Evaporation

c. Freezing

d. Conduction

e. Convection

22. Heat travels from the sun to the earth by:

a. Sublimation

b. Conduction

c. Convection

d. Radiation

e. Deposition

23 Why does a piece of metal generally feel cooler to the touch than a piece of wood?

a. The atoms in the wood vibrate faster than the atoms in the metal.

b. Wood, in general, is not a good insulator.

c. Metals, in general, are good heat conductors.

d. Metals, in general, have higher heat capacities than wood.

e. Metals are just colder than wood when left in the same environment.

24. When a comb is charged negatively by running it through your hair, the hair is

a. neutral.

b. charged negatively, too.

c. charged positively.

d. grounded.

25. When we say an appliance uses up energy, which of the following actually happens?
    a. Electrons are removed from the circuit and placed elsewhere.

    b. Kinetic energy of the electrons is converted to heat and other forms of energy.

    c. Electric charges are used and will disappear as a result.

    d. The voltage of the outlet is lowered.
    e. Electric current is disappearing in the circuit.

26. Consider a 50W light bulb and a 100W light bulb connected to a household outlet. Which of the following statements is true?
    a. The 50W light bulb has more current and less resistance.

    b. The 100W light bulb has more current and less resistance.

    c. The 50W light bulb has more current and higher resistance.

    d. The 100W light bulb has more current and higher resistance.

27. What is the basic purpose of a generator?
    a. To convert electrical energy to mechanical energy.

    b. To convert electrical energy to thermal energy.

    c. To convert thermal energy to mechanical energy.

    d. To convert mechanical energy to electrical energy.

28. When a boat is floating on a lake, the buoyant force on the boat is equal to:
    a. The weight of the boat.

    b. The volume of the boat below the surface of the lake.

    c. The volume of the boat above the surface.

    d. The mass of the boat.

29. Compared to the amount of current in a wire connected to a light bulb, the amount of current in the light bulb is:

a. greater

b. smaller

c. the same

d. sometimes less and sometimes more

30. The purpose of a fuse or a circuit breaker is:
a. to limit the amount of current in a circuit.

b. to increase the amount of current in a circuit.

c. to limit the amount of voltage in a circuit.

d. to measure the amount of current and voltage in a circuit.