T F 1. The amount of force that gives a mass of one kilogram an acceleration of 1 m/s² is one newton.

T F 2. According to Newton’s first law, a body at rest will remain at rest unless acted upon by an unbalanced force.

T F 3. Mass is a measure of the inertia of an object.

T F 4. Newton’s 3rd law states that if a constant unbalanced force acts on an object, it will move at constant velocity.

T F 5. For a constant mass, the acceleration of an object is directly proportional to the applied force.

T F 6. The frequency determines the amplitude of a wave.

T F 7. Force is the rate at which you expend energy.

T F 8. The energy an object has because of its position is called potential energy.

T F 9. Kinetic energy depends on mass and speed.

T F 10. A 50 horsepower motor can do as much work as a 100 horsepower motor.

T F 11. You do less work when you run up the stairs than when you walk slowly.

T F 12. The attractive force a 70 kg person exerts on the earth is the same as the force the earth exerts on the person.

T F 13. According to Newton’s third law, for every action, there is an equal, but opposite reaction.

T F 14. The acceleration due to gravity on the Moon is 9.8 m/s².

15. Which one of the following has an appropriate unit?
   A. work - Joule  B. force - Newton  C. energy - calorie  D. all of these.

16. The watt (W) is a unit of
   A. work  B. electrical energy  C. power  D. force

17. When a light bulb is rated at 60 W, it means that
   A. the bulb uses 60 J of power when it is lit.
   B. current is traveling at 60 m/sec through the filament.
   C. each second, the bulb converts 60 J of electrical energy to heat and light.

18. A force causes a mass to experience an acceleration, a. If the force is doubled and the mass is doubled, the acceleration is

19. If the acceleration is zero, then the speed is _______.
   A. zero.  B. constant.  C. a variable.  D. NOTA

20. A common way to define force is
   A. an outward pressure.  B. a push or a pull.  C. strain.  D. the energy effect.
21. A sheet of paper can be withdrawn from under a glass of water without spilling if the paper is jerked quickly. The reason for this is that
A. the glass has no acceleration. B. there is an action-reaction pair.
C. gravity pulls on the glass. D. the glass has inertia.
E. NOTA.

22. Light energy is also ________________ .
A. chemical energy B. infrared radiation energy
C. energy stored in fossil fuels D. electrical energy

23. Sound cannot travel through ________.
A. solids B. liquids C. gasses D. vacuum

24. Two students stand poised to leap off a high dive structure into a swimming pool below. Student B is twice as massive as student A. Which of the following is true?
A. Student B will reach the ground sooner than student A.
B. Both students have the same gravitational potential energy.
C. Both students will have the same kinetic energy just before impact.
D. Student B did twice as much work climbing to the top of the structure.

25. While exploring an ancient Mayan tomb, you discover that the walls are closing in on you. By exerting 400 N of force, you are able to keep the wall from coming closer. The work you are doing on the wall is
A. 400 J B. 3920 J
C. unknown, because the mass of the wall is not given.
D. zero, because the wall is not moving.

26. A 60 horsepower motor lifts an elevator car to the top of an 8 story building in 30 seconds. An 30 horsepower motor will lift the car to the top in ___________ seconds.
A. 40 B. 15 C. 80 D. 60

27. What type of energy is stored in the gas that you put into your car?
A. potential B. kinetic C. heat D. chemical

28. A 300 Calorie (food calorie) candy bar contains ___________ Joules of energy.
A. 8400 B. 840000 C. 1260000 D. 2100000

29. A pendulum is pulled back to position A, then released. Where is its kinetic energy a minimum?
A. A B. B C. C D. D E. A & E

30. An object is dropped off a cliff. What is its speed two seconds later?
A. 20 m/s B. 30 m/s C. 60 m/s D. 40 m/s

31. If a ball falls 60 meters, how fast will it be going when it hits the ground?
A. 35 m/s B. 64 m/s C. 44 m/s D. 100 m/s

32. How far will a ball fall in 4.5 seconds if we ignore air resistance?
A. 200 m B. 60 m C. 100 m D. 500 m

33. If you try to compare the frictional force produced by two tennis shoes, you must make sure that ________.
A. they are the same brand B. they are the same size
C. they are the same weight D. they are made from the same materials
34. Which statement best describes the motion of the ball shown in the diagram below? The position of the ball is marked at one second intervals. (Assume the ball moves from left to right.) The ball is _____.

o........o..........o........o.............o................o

A. moving with constant speed.  B. speeding up.
C. moving with zero acceleration.  D. slowing down.

35. The slope of the straight line distance vs. time graph can be used to determine ______________.

A. the speed of the object  B. how long the object traveled
C. how far the object traveled  D. All of the above can be determined.

36. Which of the following types of motion is (are) classified incorrectly?

A. sliding – interaction of objects  B. parabolic – by the path
C. gliding – by the path  D. circular – by the path
E. C and D

37. Which of the following groups of electromagnet waves are listed in order of increasing frequency?

A. radio, infrared, visible, x-ray  B. radio, visible, infrared, x-ray
C. x-ray, visible, infrared, radio  D. NOTA

38. What is the acceleration of a car that maintains a constant velocity of 200 km/h for 10 seconds?

A. 0.  B. 10 km/h/s.  C. 10 m/s/s.  D. 1000 km/h/s.

39. The acceleration due to gravity on the moon is one-sixth the acceleration due to gravity on the earth. An object that weighs 60 Newtons on the Earth will weigh ______ Newtons on the Moon.

A. 10  B. 60  C. 360  D. None of these

40. The mass that was accelerated in the Scootin’ Newton activity was ________.

A. the mass of the cart  B. the mass of the cart and any masses placed on the cart
C. the mass of the cart, any masses placed on it and the mass in the cup.
D. NOTA, it depends on how much mass was in the cup

41. A student turns the handle of an electrical generator and causes a light bulb connected to the generator to light. The energy that caused the bulb to light was originally stored inside the student. This type of energy is ______.

A. electrical  B. light  C. heat  D. mechanical  E. chemical

42. Sound waves with frequency higher than that which a human ear can hear are called ______.

E. None of the above.

43. The amplitude of a simple pendulum depends on _____.

A. mass of pendulum bob.  B. weight of pendulum bob.
C. length of support string.  D. NOTA.

44. Sound in air is produced by ________.

A. long objects  B. vibrating objects  C. air  D. moving objects
45. Which of the following groups of colors of light are listed in order of increasing frequency?
A. red, orange, blue, green, violet
B. violet, blue, green, orange, red
C. orange, green, blue, indigo, violet
D. NOTA

46. The chemical name of CH₄ is:
A. Methane  B. Acetic Acid  C. Carbonic acid  D. Sulfuric acid  E. NOTA

47. Which of the following is the formula of battery acid:
A. NaOH  B. Fe₂O₃  C. NaOCl  D. H₂SO₄  E. NOTA

48. Sodium hypochlorite has the common name of:
A. Limestone  B. Baking soda  C. Bleach  D. Lye  E. NOTA

49. Acetic acid has the formula of:
A. NaHCO₃  B. CH₃COOH  C. NaOCl  D. NH₃  E. NOTA

50. Calcium carbonate is commonly called:
A. Muratic acid  B. Rust  C. Baking soda  D. Bleach  E. NOTA