XPERTSTEM Physics Sample Test Division 4 for Grade 9 & 10

1. A light bulb with resistance of 2 ohms is connected to a 4-V battery. What is the current flowing through the circuit?

a. 0.5 A

b. 5 A

c. 2 A

d. 1 A

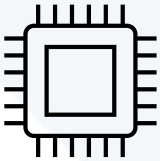
2. Equivalent resistance of four 4Ω resistance in parallel is?

a. 4Ω

b. 1Ω

c. 2Ω

d. 16Ω



3. You rub a balloon on a piece of carpet and the balloon becomes positively charged. Which of following explains the positive charge on the balloon?

a. electrons are transferred from carpet to balloon

b. protons are transferred from balloon to carpet

c. protons are transferred from carpet to balloon.

d. electrons are transferred from balloon to carpet.

4. A device that can detect small changes in magnetic fields is a

a. isochron

b. magnetometer

c. polarimeter

d. iron oxide

5. Work done to bring a charge of +1C from a point A to another point B is 50J. Now it is taken to infinity from point B and the work done is 40J then Potential of point A is _____ .

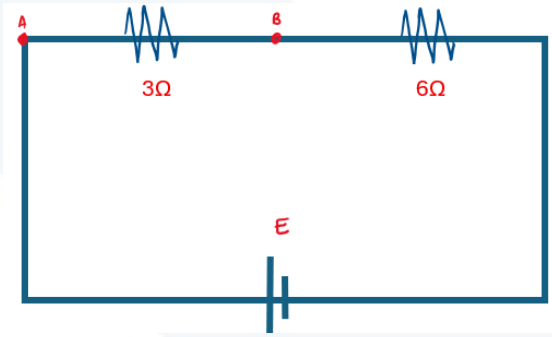
a. -50V

b. -40V

c. 90V

d. =90V

6. If V(A) - V(B) = 9V, then the value of E is_____ ?



a. 12V

b. 18V

c. 27V

d. 30V

7. **If an object is resting on a table with no motion, what two forces are acting on the object?**

a. A force down from gravity and friction from the table.

b. A force up from the table and a force down from the atmosphere.

c. A force down from gravity and a force up from the table.

d. A force down from the atmosphere and a force up from gravity.

8. **What is the difference between kinetic energy and potential energy?**

a. kinetic energy is stored energy that has the capacity to do work, and potential energy is the energy of motion

b. kinetic energy is energy that an object possesses as a result of its location, and potential is the same as heat energy

c. kinetic energy can be converted into various forms of energy, whereas potential energy can only be transformed into heat energy

d. kinetic energy is energy of a moving object, whereas potential energy is energy possessed by matter as a result of its location or structure

9. **Which ONE of the following pairs of physical quantities consists of two scalars?**

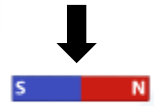
a. Speed and distance

b. Speed and acceleration

c. Displacement and velocity

d. Velocity and acceleration

10. **The pointer ↑ on a compass is the north pole of a small magnet. If a compass was placed next to a bar magnet, as shown below, what will be the correct direction of the pointer?**

a. 

b. 

c. 

d. 

11. **Two forces act simultaneous on box so that the resultant force is 120N East. If one of the forces is 70 N West, what will be other force?**

a. 190N East

b. 190 N West

c. 50 N East

d. 50 N West

12. **What is the law of incidence in reflection?**

a. The angle of incidence is equal to the angle of reflection

b. The angle of incidence is greater than the angle of reflection

c. The angle of incidence is smaller than the angle of reflection

d. The angle of incidence is unrelated to the angle of reflection

13. **Why does light stay inside an optical fiber over long distances?**

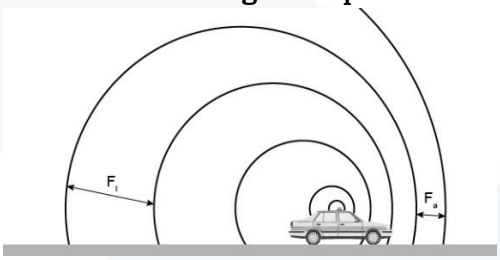
a. Due to refraction

b. Due to diffraction

c. Due to total internal reflection

d. Due to reflection

14. **What does the diagram represent?**



a. the actual shift in frequency of sounds waves by a moving object

b. the apparent shift in frequency of sounds waves by a moving object

c. the actual shift in frequency of sounds waves by a stationary object

d. the apparent shift in frequency of sounds waves by a stationary object

15. **If a wave has a frequency of 10 Hz and a wavelength of 100 m, what is its velocity?**

a. 10 m/s

b. 20 m/s

c. 100 m/s

d. 1000 m/s

16. **A block weighing 15N rests on a flat surface and a horizontal force of 3N is exerted on it. Determine the frictional force on the block.**

a. 0.3N

b. 0.5N

c. 3N

d. 5N

17. **After a cannonball is fired into frictionless space, the amount of force needed to keep it going is equal to _____.**
…

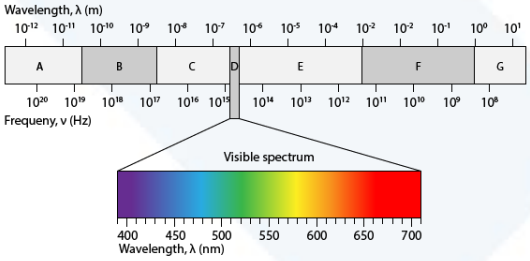
a. twice the force with which it was fired

b. 1/2 the force with which it was fired

c. 1/4 the force with which it was fired

d. zero, since no force is required to keep it moving.

18. **The diagram shows the electromagnetic spectrum. Which letters represent radio and gamma waves?**



a. A, F

b. F, C

c. G, A

d. C, G

19. Under constant temperature, the pressure of a gas is inversely proportional to the volume, according to which gas law?

a. Charles' Law

b. Boyle's Law

c. Gay-Lusaac's Law

d. Combined Gas Law

20. A 10-kg rock is thrown up. It is moving at 9 m/s. What is its potential energy at the top? (Hint: conservation of energy)

a. 405 J

b. 300 J

c. 1000 J

d. 500 J

21. An object is released from rest at a height of 25 m. Calculate the time it takes to fall to the ground.

a. 0.25 s

b. 0.10 s

c. 2.5 s

d. 2.26 s

22. An outfielder is practicing catching pop-up fly balls. He throws the baseball straight up with a velocity of +15 m/s. At what height will it reach its peak, if it falls back to his mitt, at the same height he released the ball, in 3 s?

a. 45 m

b. 22.5 m

c. 11.5 m

d. 10 m

23. The product of a force and the length of time the force is applied to an object is called_____, and it causes a change in its momentum.

a. velocity

b. interval

c. impulse

d. work

24. Two trucks each have a mass of 3000 kg. The gravitational force between the trucks is 4.00 × 10^-5 N. One truck is then loaded with 1000 kg of rock. What would be the new gravitational force between the two trucks??

a. 5.75.00 × 10^-5 N

b. 6.50 × 10^-5 N

c. 4.75 × 10^-5 N

d. 5.33 × 10^-5 N

25. On the diagram of the euglena, what is the name & primary function of structure I?

a. Flagellum - propelling

b. Paraflagellar body – storage of waste

c. Reservoir – housing and storage of nutrients and waste

d. Nucleus - control

26. How much energy is stored in a spring with a spring constant of 350 N/m if it is compressed a distance of 74 cm?

a. 12950 J

b. 95.8 J

c. 129.5 J

d. 131.25 J

27. A water bed that is 1.5 m wide and 2.5 m long weighs 1055 N. Assuming the entire lower surface of the bed is in contact with the floor, what is the pressure the bed exerts on the floor?

a. 250 Pa

b. 260 Pa

c. 270 Pa

d. 280 Pa

28. A wire of radius r has resistance R. If it is stretched to a radius of 3r/4, its resistance becomes…

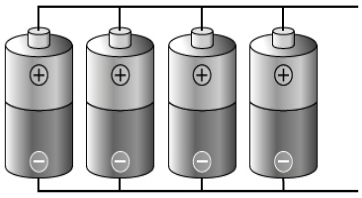
a. 9R/16

b. 16R/9

c. 81R/256

d. 256R/81

29. How much voltage will this battery set-up provide if each of the four is a 1.5 V battery?



a. 1.5 V

b. 3 V

c. 6 V

d. 9 V

30. When a generator converts mechanical energy to electrical energy, some of it is lost in the form of heat. The ratio of the useful output to its input is called a generator's _____.

a. power

b. efficiency

c. range

d. functionality

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