

Answers of Mock Final Exam (Issam)

1. The number of significant figures of the number 0.123 is:

A. 1

B. 2

C. 3

D. 4

2. The number of decimal point in the number 3.043 is

A. 1

B. 2

C. 3

D. 4

3. As a scientific notation the 36900 can be written as

A. 3.69×10^4

B. 36.9×10^3

C. 369×10^2

D. 3690×10^1

4. Dimensions of speed is

A. $[L/T^3]$

B. $[L/T^2]$

C. $[L/T]$

D. $[LT]$

$$speed(v) = \frac{distance}{time} = \frac{m}{s} = \left[\frac{L}{T} \right]$$

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5. How much work is done in lifting a object that is four times as heavy the same distance?

A. Four times as much

B. Half as much

C. The same

D. Depends on the speed of the lift

6. A job can be done slowly or quickly. Both may require the same amount of work, but different amounts of

A. Energy.

B. Momentum.

C. Power.

D. Impulse.

7. If the net force acting on an object increases, its acceleration:

A. Increases

B. Decreases

C. Remains constant

D. Either increase or decrease

8. A 1-kg falling ball encounters 10 N of air resistance. The net force on the ball is:

A. 0 N

B. 5 N

C. 10 N

D. 20 N

$$W = mg = 1 \times 10 = 10 \text{ N}$$

$$\text{air resistance } (R) = 10 \text{ N} = W$$

$$F_{net} = W - R = 0$$

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9. A **10-cm**-long spring extends to **12 cm** when a **1-kg** load is suspended from it. What would be **its length** if a **3-kg** load were suspended from it?

A. 16 cm

B. 18 cm

C. 20 cm

D. 24 cm

Explanation:

Extension ~ force

When force is 1 kg weight,
extension is 2 cm.

If force is 3 kg weight,
extension is $3 \times 2 \text{ cm} = 6 \text{ cm}$.

So, length is $10 \text{ cm} + 6 \text{ cm} = 16 \text{ cm}$.

10. Water pressure provided by a water tower is greater if the tower

A. is taller.

B. holds more water.

C. made in USA.

D. None of the above.

Explanation:

Only depth, not amount of water, contributes to pressure

11. The repulsive force between two identical 1-C charges separated by 300 m is:

A. 0.1 kN

B. 1 kN

C. 10 kN

D. 100 kN.

$$F_{elec} = k \frac{q_1 q_2}{d^2} = 9 \times 10^9 \frac{1 \times 1}{(300)^2} = \frac{9 \times 10^9}{9 \times 10^4} \\ = 1 \times 10^5 \text{ N} = 100 \text{ kN}$$

12. An object in mechanical equilibrium if the net force (ΣF) acting on it

A. is positive

B. zero

C. negative

D. infinity

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13. Newton third law of motion state that:

- A. For every action, there is an equal reaction.
- B. For every action, there is an equal and same reaction.
- C. For every action, there is an equal and opposite reaction.**
- D. For every action, there is no reaction.

14. In linear motion the quantities vector and scalar define:

- A. Vector has magnitude and direction, scalar has magnitude only**
- B. scalar has magnitude and direction, vector has magnitude only
- C. both vectors and scalars have magnitude and direction
- D. both vectors and scalars have no magnitude and no direction

15. When you brush your hair and scrape electrons from your hair, the charge of your hair is

- A. positive.**
- B. negative.
- C. Both A and B.
- D. Neither A nor B.

16. According to Coulomb's law, a pair of particles that are placed three-times as far apart will experience forces that are

- A. 1/3 as strong.**
- B. 1/9 as strong.
- C. Three-time as strong.
- D. 9 times as strong.

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17. Which of these statements is true?

A. Electric current is a flow of electric charge.

B. Electric current is stored in batteries.

C. Electric charge is stored in resistance.

D. Electric charge cannot be stored in a capacitor.

18. When two identical lamps in a circuit are connected in series, the total resistance is

A. less than the resistance of either lamp.

B. the same as the resistance of each lamp.

C. more than the resistance of each lamp.

D. None of the above.

19. Normally, the helium atom's net charge is:

A. negative

B. positive

C. zero

D. a vector

20. A capacitor consists of:

A. a conductor between two insulating plates

B. an insulator between two conducting plates

C. two insulating plates in vacuum

D. two conducting plates in vacuum

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21. Two identical charge particles separated by a distance d

A. Will be attracted to each other

B. Repel each other

C. No force between them

D. Spinning along d

22. In electricity, the kilowatt-hour is a unit of:

A. electric current

B. electric potential

C. electric power

D. electric energy

23. 1 joule/coulomb is equivalent to:

A. 1 joule/second

B. 1 ampere/second

C. 1 volt

D. 1 ampere/coulomb

24. The SI unit for the electric power is the:

A. ampere

B. watt

C. volt

D. joule

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25. Two identical light bulbs, each of resistance $12\ \Omega$, are connected in parallel to a 12-V battery. Their equivalent resistance is:

A. $4\ \Omega$

B. $6\ \Omega$

C. $12\ \Omega$

D. $24\ \Omega$

26. If an electron vibrates up and down 1000 times each second, it generates an electromagnetic wave with a

A. period of 1000 s.

B. speed of 1000 m/s.

C. frequency of 1000 Hz.

D. wavelength of 1000 m.

27. The electromagnetic spectrum spans waves ranging from lowest to highest frequencies. The lowest energy of the electromagnetic spectrum is that of

A. radio waves.

B. microwaves.

C. visible light.

D. x-rays.

28. In an electromagnetic wave, the electric and magnetic fields are:

A. perpendicular to each other and to the direction of motion

B. parallel to each other and to the direction of motion

C. perpendicular to each other and parallel to the direction of motion

D. parallel to each other and perpendicular to the direction of motion

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29. Light reflecting from a smooth surface undergoes a change in

A. Frequency and direction.

B. Direction only.

C. Wavelength and speed.

D. Speed only

30. When light travels from one medium to another and changes speed in doing so, we call the process

A. reflection.

B. refraction.

C. dispersion.

D. diffusion.

31. The angle of refraction is always:

A. equal to the angle of incidence

B. smaller than the angle of incidence

C. larger than the angle of incidence

D. either smaller or larger of the angle of refraction

32. When white light passes through a prism, violet light is bent more than

A. blue light.

B. yellow light.

C. red light.

D. all the above.

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33. One of lens defects is the Astigmatism (اللانقطية) , which

A. result of various colors having different speeds

B. front surface of the eyeball is unequally curved

C. result of light passing through the edges of a lens

D. result from water in the eye.

34. The natural decay of radioactive elements occurs in the

A. soil.

B. air.

C. interior of Earth.

D. All of the above.

35. Which of these is the nucleus of the helium atom?

A. Alpha

B. Beta

C. Gamma

D. All are different forms of helium

36. Most of natural radiation exposure come from

A. Uranium

B. Radon

C. Thorium

D. Polonium

37. The unit of radiation dose is

A. Newton

B. Rad

C. Joule

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D. Sad