FOR MORE PAPERS, GO TO VUINSIDER.COM

A net torque applied to a rigid object always tends to produce:

- ► **rotational equilibrium**
- ► linear acceleration
- ► angular acceleration
- ► rotational inertia

An object attached to one end of a spring makes 20 vibrations in 10 s. Its angular frequency is:

- ► 12.6 rad/s
- ► 1.57 rad/s
- ► **2.0 rad/s**
- ► 6.3 rad/s

In simple harmonic motion, the restoring force must be proportional to the:

- ► amplitude
- ► frequency
- ► velocity
- ► **displacement**

Mercury is a convenient liquid to use in a barometer because:

- ► it is a metal
- ► it has a high boiling point
- ► it expands little with temperature
- ► **it has a high density**

The units of the electric field are:

VU Insider

For more papers, go to VUInsider.com

FOR MORE PAPERS, GO TO VUINSIDER.COM

► **J/m**

► J/(C·m)

► J/C

► J·C

A farad is the same as a

► **J/V**

► V/J

► C/V

► V/C

We desire to make an LC circuit that oscillates at 100 Hz using an inductance of 2.5H. We also need a capacitance of:

► 1 F

► 1mF

► 1 µF

► **100 µF**

The wavelength of red light is 700 nm. Its frequency is _____.

► 4.30 * 104 Hertz

► 4.30 * 103 Hertz

► **4.30 * 105 Hertz**

► 4.30 * 102 Hertz

Which of the following statements is NOT TRUE about electromagnetic waves?

► Electromagnetic waves satisfy the Maswell's Equation.

VU Insider

For more papers, go to VUInsider.com

FOR MORE PAPERS, GO TO VUINSIDER.COM

► Electromagnetic waves can not travel through space.

► The receptions of electromagnetic waves require an antenna.

► **The electromagnetic radiation from a burning candle is unpolarized.**

Radio waves and light waves are _____.

► Longitudinal waves

► Transverse waves

► **Electromagnetic and transverse both**

► Electromagnetic and longitudinal both

Wien's Law states that, *lmax* = _____ K.

► 2.90 * 10-3 Hertz

► 2.90 * 10-3 s

► 2.90 * 10-3 kg

► **2.90 * 10-3 m**

Interference of light is evidence that:

► the speed of light is very large

► light is a transverse wave

► **light is a wave phenomenon**

► light is electromagnetic in character

Fahrenheit and Kelvin scales agree numerically at a reading of:

► **-40**

► 0

► 273

VU Insider

For more papers, go to VUInsider.com

► 574

According to the theory of relativity:

► **moving clocks run fast**

► energy is not conserved in high speed collisions

► the speed of light must be measured relative to the ether

► none of the above are true

Light from a stationary spaceship is observed, and then the spaceship moves directly away from the observer at high speed while still emitting the light. As a result, the light seen by the observer has:

► higher frequency and a longer wavelength than before

► **lower frequency and a shorter wavelength than before**

► higher frequency and a shorter wavelength than before

► lower frequency and a longer wavelength than before

How fast should you move away from a 6.0 × 1014 Hz light source to observe waves with a frequency of 4.0 × 1014 Hz?

► 20c

► **38c**

► 45c

► 51c

The quantum number n is most closely associated with what property of the electron in a hydrogen atom?

► **Energy**

VU Insider

FOR MORE PAPERS, GO TO VUINSIDER.COM

- ▶ Orbital angular momentum
- ▶ Spin angular momentum
- ▶ Magnetic moment

The quantum number ms is most closely associated with what property of the electron in an atom?

- ▶ Magnitude of the orbital angular momentum
- ▶ **Energy**
- ▶ z component of the spin angular momentum
- ▶ z component of the orbital angular momentum

As the wavelength of a wave in a uniform medium increases, its speed will ____.

- ▶ Decrease
- ▶ Increase
- ▶ **Remain the same**
- ▶ None of these

The lowest tone produced by a certain organ comes from a 3.0-m pipe with both ends open. If the speed of sound is 340m/s, the frequency of this tone is approximately:

- ▶ A. 7Hz
- ▶ B. 14 Hz
- ▶ C. 28 Hz
- ▶ **D. 57 Hz**

To raise the pitch of a certain piano string, the piano tuner:

VU Insider

For more papers, go to VUInsider.com

FOR MORE PAPERS, GO TO VUINSIDER.COM

► **A. loosens the string**

► B. tightens the string

► C. shortens the string

► D. lengthens the string

An object attached to one end of a spring makes 20 vibrations in 10 s. Its angular frequency is:

► **12.6 rad/s**

► 1.57 rad/s

► 2.0 rad/s

► 6.3 rad/s

For an object in equilibrium the net torque acting on it vanishes only if each torque is calculated about:

► the center of mass

► the center of gravity

► the geometrical center

► **the same point**

Ten seconds after an electric fan is turned on, the fan rotates at 300 rev/min. Its average angular acceleration is:

► **3.14 rad/s2**

► 30 rad/s2

► 30 rev/s2

► 50 rev/min2

VU Insider

For more papers, go to VUInsider.com

FOR MORE PAPERS, GO TO VUINSIDER.COM

Questions:

Question No: 1 (Marks: 3)

Two people are carrying a uniform wooden board that is 3.00 m long and weighs 160 N. If one person applies an upward force equal to 60 N at one end, at what point does the other person lift? Begin with a free-body diagram of the board.

Forces in x direction = 0

Forces in Y = F1 + F2 – W

Question No: 2 (Marks: 3)

If a charged particle moves in a straight line through some region of space, can you say that the magnetic field in that region is zero?

Question No: 3 (Marks: 5)

A bike accelerates uniformly from rest to a speed of 7.10 m/s over a distance of 35.4 m. Determine the acceleration of the bike.

Question No: 4 (Marks: 5)

A flat loop of wire consisting of a single turn of cross-sectional area 8.00 cm2 is perpendicular to a magnetic field that increases uniformly in magnitude from

VU Insider

For more papers, go to VUInsider.com

FOR MORE PAPERS, GO TO VUINSIDER.COM

0.500 T to 2.50 T in 1.00 s. What is the resulting induced current if the loop has a resistance of 2.00 W?

VU Insider

For more papers, go to VUInsider.com