**Physics Final Exam Review Key**

***Use this REVIEW SHEET and the notes in the NOTEBOOK TAB ON THE WEBSITE to prepare for your exam.***

**Newton’s Laws**

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| --- | --- | --- |
| **1st Law** | **2nd Law** | **3rd Law** |
| An object in motion/at rest will stay in motion/at rest unless acted on by another force. | The force acting on an object is equal to its mass times acceleration. | For every action there is an equal and opposite reaction. |

**Potential and Kinetic Energy**

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| --- | --- |
| **Potential Energy** | **Kinetic Energy** |
| Definition: Stored energy that COULD do work. | Definition: Energy that DOES work. |
|  |  |
| **Chemical Potential Energy** | **Mechanical** |
| Energy that will be released during a chemical reaction. | Energy of motion. |
| Examples: Food, battery, Gasoline |  |
|  | **Sound** |
| **Gravitational Potential Energy** | Movement of energy through waves by vibrations. |
| Energy because of its position |  |
| Examples: Rock at top of hill, Bowstring pulled back. | **Heat** |
|  | Movement of energy through particles. |

**Energy Types**

|  |  |  |
| --- | --- | --- |
| *Energy Type* | ***Definition*** | ***Examples (2)*** |
| **Mechanical** | Transfer of energy through motion. | Windmill, roller coaster |
| **Kinetic** | Energy that DOES work. | Wind, running water |
| **Potential** | Stored energy the COULD do work. | Gasoline, sled at top of hill |
| **Nuclear** | Energy that is released from a nuclear reaction. | Atom splitting, radioactive decay |
| **Electrical** | Energy found in the current of electrons. | Lamp, lightening |
| **Heat/Thermal** | Transfer of energy through particles. Measured by temperature. | Fire, steam |
| **Chemical** | Stored energy in any type of fuel source. | Food, batteries |
| **Light** | Energy from the sun or any luminous object. | Sun, x-rays |
| **Sound** | Transfer of energy through vibrations. | Radio, thunder |

**Energy Transfer**

You need to be able to identify the **transfer of energy** from one source to another.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Blow Dryer** | Energy transfers **from** | Electrical | **to** | Heat |
| **Apple Tree** | Energy transfers **from** | Light | **to** | Chemical |
| **Guitar** | Energy transfers **from** | Mechanical | **to** | Sound |
| **Car Engine** | Energy transfers **from** | Chemical | **to** | Mechanical |
| **Light Bulb** | Energy transfers **from** | Electrical | **to** | Light |
| **Solar Panel** | Energy transfers **from** | Light | **to** | Electrical |

**Waves**

|  |  |
| --- | --- |
| *Vocabulary Word* | ***Definition*** |
| **Amplitude** | How high a wave is from the resting point. |
| **Crest** | The highest point on a wave. |
| **Trough** | The lowest point on a wave. |
| **Wavelength** | The distance between corresponding points on 2 consecutive waves. |
| **Frequency** | How many waves there are in a certain amount of time. |
| **Medium** | The substance that the wave travels through. |
| **Transverse Wave** | Wave particles move up and down (perpendicular) to the direction of motion. |
| **Longitudinal Wave** | Wave particles move back and forth(parallel) to the direction of motion. |
| **Compression** | When the particles are close together in a longitudinal wave. |
| **Rarefaction** | When the particles are far apart in a longitudinal wave. |

**Label the parts of each wave.**

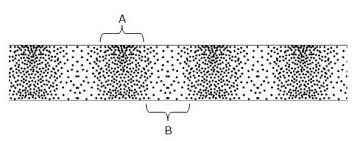
Compression

Wavelength

Crest

Wavelength





**Label the parts of each wave.**

Amplitude

Trough

Rarefaction

\_\_\_\_\_\_Longitudinal\_\_\_\_\_\_\_ Wave

\_\_\_\_\_\_\_Transverse\_\_\_\_\_\_\_ Wave

**Pitch and Loudness**

The higher the PITCH, the higher the frequency.

The LOUDER the sound, the higher the amplitude.

**Analog vs. Digital Signals**

|  |  |  |
| --- | --- | --- |
| **Analog** |  | **Digital** |
| Continuous electric pulses of varying amplitudes | **Definition** | Translates information into binary format with two distinct amplitudes. ( 0 or 1 ) |
| Continuous | **Signal** | Individual bits of information |
| Sine or transverse | **Wave Type** | Square waves |
| Records, cassette tapes, speech | **Examples** | CD’s, DVD’s, Digital devices |
| Records AS IS | **Technology** | Converts analog waves to binary format |
| CAN be affected by noise during transmission | **Response to Noise** | Noise immune |
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