Physics Unit

[Name of the Writer]

[Name of the Institution]

In Physics, the motion is described in terms of velocity, distance, displacement, time, speed, and acceleration. Aristotle attempts to clarify motion by classification. There are two main types of motions according to Aristotle, named as violent motion and natural motion. Galileo claims that friction is the ability that overcomes the inertia of any moving object, causing it to stop. Newton demonstrates that an external force is needed to stop a moving object. Moreover, he proposed that every action has an equal and opposite reaction. An object is in the state of free fall when air resistance is negligible as that object is attracted towards earth due to gravitational force. Momentum is the quantity of motion of a moving body, which is measured in terms of its velocity and mass. It is often defined as “Mass in motion.” In order to increase the momentum of an object, the quantity of force along with time needs to be extended (Hewitt et al., 2013). It is notable to mention that the momentum of a system remains unchanged in the absence of an external force. Newton’s law of universal gravitation states that every particle attracts others with a force. This force is directly proportional to the product of their masses and inversely proportional to the square of the distance between their centers. The point that is located at the object’s average position of weight is referred to as the center of gravity. Centripetal force causes an object to move in a circular path. This force is directed towards the central nucleus. The matter is made up of tiny particles such as molecules and atoms. Gravitational attraction is the reason behind the projective motion of the moon around the earth. According to the laws of thermodynamics, energy can neither be created nor destroyed in an isolated system (Capitelli, Colonna & D'Angola, 2011). Entropy is the measure of the thermal energy of a system per unit temperature. Temperature is the degree of coldness and hotness of an object. Like thermal inertia, the specific heat capacity of shows the resistance of a substance to a change in temperature.

Coulomb’s law gives an idea about the force between two point charges. According to Coulomb's law, unlike charges attract each other and like charges repel each other. Electric potential is the product of electric potential energy per amount of charge. Electric current is categorized into direct current and alternating current. Wave is responsible for carrying energy from one place to another. A wave only travels energy from one place to another, instead of matter. The speed of a wave is one meter per second if the wavelength of one meter passes through a matter in one second. The resonance frequency is a natural frequency, which is a common cause of sound production in musical instruments. Atom is comprised of proton, electron, and nucleus. Proton is positively charged, and the electron is negatively charged. Neutron is electrically neutral but has the same size as the proton. The periodic table is a tabular arrangement of the chemical elements. On the periodic table, each element is designated and arranged on the basis of its atomic number (Giancoli, 2016). Periodic table contains the chemical properties of each element along with their electron configuration. Radioactive elements have unstable nuclei, which break down into energetic particles. Radioactivity is the emission of high-frequency electromagnetic radiation. Alpha particle have a relatively large particle size and is the combination of two protons and two neutrons. Moreover, alpha particles have a relatively double positive charge (+2) as compared to beta and gamma. Gamma particles have no charge, but their penetration power is greater than other particles.

**References**

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