Unit 1:

Acceleration: The rate of change of velocity.

Equilibrium: When all of the forces acting at a point balance, the resultant force is zero. The point is said to be in equilibrium (zero acceleration).

A Frame of Reference: A system of coordinates from which to measure/look.

Newton’s First Law: A body will remain at rest or at constant velocity unless acted upon by an external net force.

Newton’s Second Law: An object will accelerate in the direction of the external net force acting. The acceleration of the body is directly proportional to the size of the net force and inversely proportional to the mass of the body.

Newton’s Third Law: If body A exerts a force F on body B, then body B exerts a force of –F on body A. (Forces always occur in pairs. We call them ‘Newton Third Law Pairs of forces.)

Features of circular motion: 1. Velocity is always at a tangent to the circle.

2. Direction constantly changes, so velocity constantly changes.

3. Object is constantly accelerating.

4. There is a net force producing the acceleration. (This force is called the centripetal force. It always acts towards the centre of the circle.

Unit 2:

Work: The energy transferred to an object through a force that causes the object to move.

Energy: The ability to do work.

Kinetic Energy: The energy of an object in motion.

Potential Energy: The energy stored in an object.

Gravitational Potential Energy: The energy stored in an object because of its position and the applied gravitational force.

Elastic Potential Energy: The energy stored in an elastic material due to the stretching or compressing of the material from its rest state. (It allows the material to do the work it needs to return to original shape.)

Simple Harmonic Motion: Periodic motion in which the acceleration of the moving object is proportional to its displacement. (pendulum, uniform circular motion, oscillating mass-spring systems)

Law of Conservation of momentum: In a closed system (no external forces acting), momentum is conserved.

Unit 3:

Gravitational Fields: A collection of vectors, one at each point in space, that determine the magnitude and direction of the gravitational force.

Magnetic Flux Density: Describes how strong the magnetic strength is.

Neutral Point: Net magnetic field strength is zero.

Angle of Dip: The angle that the field lines make with the surface of the earth as they enter or leave the earth.

In magnetic fields the direction of the force is always perpendicular to the field producing the force. The force is also dependent upon the velocity of the charge. This is not the case in gravitational and electric fields.

Coulomb’s Law: The force between two charges is inversely proportional to the square of the distance between the charges and directly proportional to the product of the charges.