

## Appendix A

### Essential Equations

- (i) The relationship between speed, distance and time:

$$\text{speed} = \text{distance} / \text{time taken}$$

- (ii) The relationship between force, mass and acceleration:

$$\text{force} = \text{mass} \times \text{acceleration}$$

$$\text{acceleration} = \text{change in velocity} / \text{time taken}$$

- (iii) The relationship between density, mass and volume:

$$\text{density} = \text{mass} / \text{volume}$$

- (iv) The relationship between force, distance and work:

$$\text{work done} = \text{force} \times \text{distance moved in direction of force}$$

- (v) The energy relationships:

$$\text{energy transferred} = \text{work done}$$

$$\text{kinetic energy} = \frac{1}{2} \times \text{mass} \times \text{speed}^2$$

$$\text{change in potential energy} = \text{mass} \times \text{gravitational field strength} \times \text{change in height}$$

- (vi) The relationship between mass, weight and gravitational field strength:

$$\text{weight} = \text{mass} \times \text{gravitational field strength}$$

- (vii) the relationship between an applied force, the area over which it acts and the resulting pressure:

$$\text{pressure} = \text{force} / \text{area}$$

- (viii) The relationship between speed, frequency and wavelength:

$$\text{wave speed} = \text{frequency} \times \text{wavelength}$$

## CHAPTER ONE

# **General Introduction**