

## **IGCSE Physics (9-1) Specification 3(c)**

### **(c) The electromagnetic spectrum**

#### **Students should:**

**3.10** know that light is part of a continuous electromagnetic spectrum that includes radio, microwave, infrared, visible, ultraviolet, x-ray and gamma ray radiations and that all these waves travel at the same speed in free space

**3.11** know the order of the electromagnetic spectrum in terms of decreasing wavelength and increasing frequency, including the colours of the visible spectrum

**3.12** explain some of the uses of electromagnetic radiations, including:

- radio waves: broadcasting and communications
- microwaves: cooking and satellite transmissions
- infrared: heaters and night vision equipment
- visible light: optical fibres and photography
- ultraviolet: fluorescent lamps
- x-rays: observing the internal structure of objects and materials, including for medical applications
- gamma rays: sterilising food and medical equipment.

**3.13** explain the detrimental effects of excessive exposure of the human body to electromagnetic waves, including:

- microwaves: internal heating of body tissue
- infrared: skin burns
- ultraviolet: damage to surface cells and blindness
- gamma rays: cancer, mutation

and describe simple protective measures against the risks