

# Answers to Self-assessment practice tests Block 5

- 1** a nucleus  
b protons and neutrons  
c electrons  
d nucleus  
e a trillion
- 2** a 15  
b proton number = 7; neutron number = 8  
c  ${}^{14}_7\text{N}$   
d 7
- 3** a The positively charged alpha particle is repelled by the positively charged nucleus.  
b It is too far from the nucleus for the force to be strong enough to cause it to change direction.  
c It is approaching the nucleus almost 'head-on' so that the force on it is strong and causes it to change direction by over 90°.
- 4** a radon  
b cosmic rays/radiation  
c food and drink, or building materials/soil and rocks  
d Cosmic rays are more intense at higher altitudes because there is less atmosphere above to absorb them.
- 5** a the nucleus  
b gamma rays  
c two protons and two neutrons  
d beta particle  
e alpha and beta  
f gamma rays
- 6** a  ${}^{14}_6\text{C} \rightarrow {}^{14}_7\text{N} + {}^0_{-1}\text{e} + \text{energy}$   
b beta particle (or electron)  
c negative
- 7** a gamma  
b alpha  
c alpha  
d gamma
- 8** a 800  
b 1400  
c 15 minutes