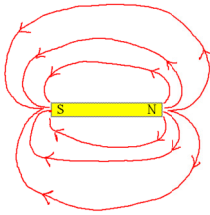


Year 11 Physics Magnetic Fields and Electromagnetism Assignment ANSWERS

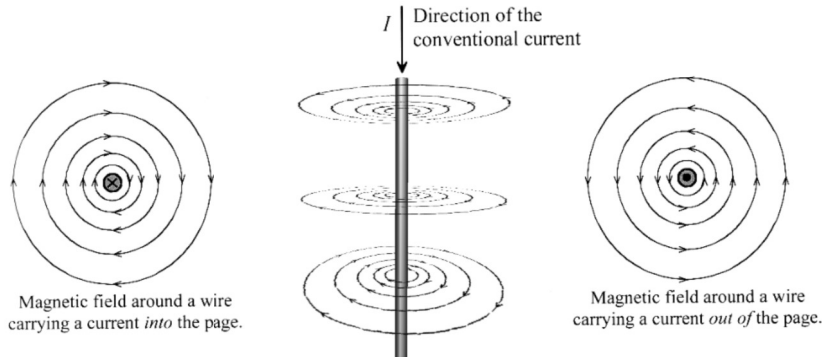
1.

a)



/2

b)



/2

2. Determining the relationship between the direction of force on a wire (slap of palm), the direction of its current (thumb direction) and the direction of the magnetic field (fingers). /2

3.

a) $F = BI\Delta l = 2.0 \times 3.0 \times 0.20 = 1.2 \text{ N}$ /2

b) $F = BI\Delta l \sin \theta$

$$\therefore B = \frac{F}{I\Delta l \sin \theta} = \frac{2.6}{3.0 \times 0.0162 \times \sin 13.4^\circ} = 2.3 \times 10^2 \text{ T}$$
 /2

4.

a) Out of the page

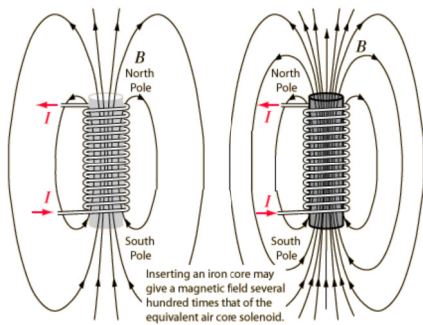
b) To the left

/4

c) Towards the top of the page

d) Into the page

5.



/3

Current moving through the coil produces a magnetic field as shown above.

6.

a) The use of a magnetic field to produce current in a conductor. /1

b) $\frac{V_P}{N_P} = \frac{V_S}{N_S} \therefore V_S = \frac{V_P N_S}{N_P} = \frac{24 \times 50}{100} = 12 \text{ V}$

c) $P_P = P_S \therefore V_P I_P = V_S I_S \therefore I_S = \frac{24 \times 0.050}{12} = 0.10 \text{ A}$ /4

7. In an electric motor, the current moves through a coil in a magnetic field, producing a force on the coil. In a generator a coil is turned in a magnetic field, inducing a current in the coil. /2

TOTAL /24