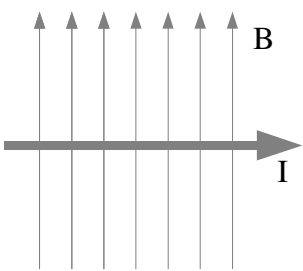
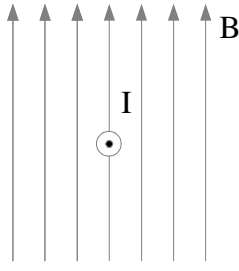
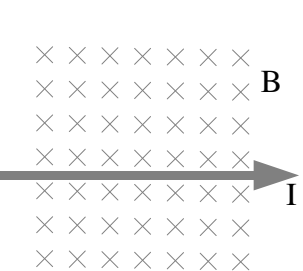
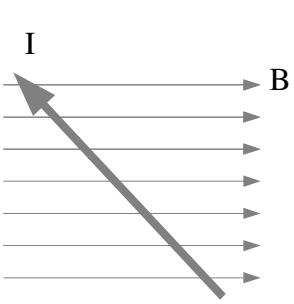


Year 11 Physics

Magnetic Fields and Electromagnetism Assignment

- 1.
- a) Draw a magnet, showing the magnetic field lines around it. /2
- b) Draw a diagram showing the magnetic field produced by a current in a wire. /2
2. Describe what the “right hand palm ('slap') rule” is used for and how to use it. /2
- 3.
- a) A wire carries a current of 3.0 A at right angles to a uniform magnetic field of strength 2.0 T. If 20 cm of the wire is in the field at right angles to it, calculate the magnitude of the force on the wire. /2
- b) Another wire carrying the same current through a different field at an angle of 13.4° to the field experiences a force of magnitude 2.6 N. Calculate the magnitude of the magnetic field strength if 16.2 mm of the wire is in the field. /2
4. State the direction of the force on the following current-carrying conductors in uniform magnetic fields:
- a)  /2
- b)  /2
- c)  /2
- d)  /2
5. With the aid of a diagram, explain how an electromagnet works. /2
6. A transformer uses *electromagnetic induction* to transfer energy from one coil to another.
- a) State what electromagnetic induction is. /2
- b) Calculate the secondary voltage in a transformer, if the primary coil has 100 turns, 24 V, and a current of 0.050 A. The secondary coil has 50 turns. /2
- c) Hence calculate the current induced in the secondary coil of the transformer, assuming 100% efficiency (the primary power is equal to the secondary power). /2
7. Compare the operation of an electric motor and an electrical generator. /2

TOTAL /24