

**MAGNETISM ANS**

1.

- (a) (i) iron; soft iron; mu-metal B1
- (ii) rod becomes (an induced) magnet B1
- opposite poles attract; N attracts S OR magnetic pole(s) on rod/at P reverses (due to induced magnetism) B1
- (b) (i) at least two circles centred on wire (no crossings) B1
- clockwise arrow on at least one circle and no arrows wrong B1
- (ii) lines closer together B1 [6]

2.

- (a) place the magnet on a sheet of paper and draw round it (1)
  - place a plotting compass near the magnet (1)
  - mark the position of both ends of the plotting compass (1)
  - move the plotting compass and repeat (1)
  - join the dots (1)
  - (if iron filings method used, mark to max. 3 or max. 4 if plotting compass used to find the direction) [5]
  - (b) (i) steel bar placed inside coil and d.c. passed through coil (1)
  - (ii) magnet placed inside coil with a.c in coil (1)
  - (slowly) decrease current / remove magnet (1)
  - (this mark is dependant upon the previous mark being gained) [3]
  - (c) iron is easily magnetised / makes a strong electromagnet (1)
  - easily loses its magnetism (when current switched off) (1) [2]
- [Total: 10]

3.

- Region (of space) where there is a force M1
- either on / produced by magnetic pole
- or on / produced by current carrying conductor / moving charge A1 [2]

4.

- A magnet OR magnetised
  - B magnet OR magnetised
  - C iron OR unmagnetised
  - D aluminium
- 4

5.

- (a) (i) N at left and S at right B1
- (ii) attract e.c.f. B1
- (b) (i) N at left and S at right B1
- (ii) attract e.c.f. B1
- (c) attract B1
- (d) nothing B1 [6]

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