

## 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]