

7 (a) Define magnetic flux density.

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..... [2]

(b) A long, straight wire carries a current into the page, as shown in Fig. 7.1.



Fig. 7.1

On Fig. 7.1, draw four field lines to represent the magnetic field around the wire due to the current in it. [3]

(c) Two identical wires X and Y are placed parallel to each other. The wires both carry current into the page, as shown in Fig. 7.2.

X



Y



Fig. 7.2





- (i) Explain why the two wires exert a magnetic force on each other.

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- (ii) On Fig. 7.2, draw an arrow to show the direction of the magnetic force exerted on wire X. Label your arrow F. [1]

- (iii) The current in X is double the current in Y.

State how the magnetic force exerted on wire Y compares with the magnetic force exerted on wire X.

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..... [2]

- (iv) The direction of the current in both wires is now reversed.

State, with a reason, the effect of this change on the direction of the force on wire X.

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..... [1]