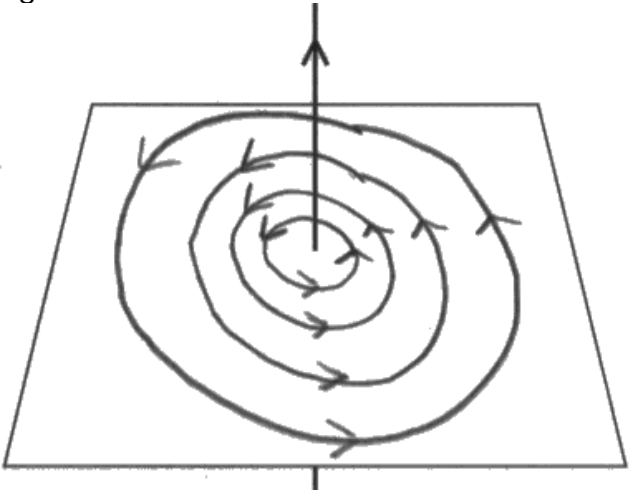


Question number	Answer	Notes	Marks
2 (a) (i)	<p>MP1. single circle centred on the wire and parallel to the plane of the card;</p> <p>MP2. at least two concentric circles;</p> <p>MP3. anti-clockwise direction arrow marked on at least one line;</p> <p>e.g.</p> 	<p>allow gap where circle crosses wire</p> <p>circles do not have to stay within the card</p> <p>DOP</p> <p>ignore spacing</p> <p>reject if contradicting arrows</p>	3
(ii)	<p>EITHER:</p> <p>MP1. iron filings used;</p> <p>MP2. tap card / eq.;</p> <p>OR</p> <p>MP1. (plotting) compass used;</p> <p>MP2. multiple compasses used / compass moved to new position;</p> <p>OR</p> <p>MP1. use of a magnet / another current-carrying conductor;</p> <p>MP2. to produce a force / movement;</p>	<p>ignore references to magnets, other current-carrying wires being used</p> <p>allow iron powder, steel dust etc.</p> <p>allow use of a magnetometer</p>	2

(b)	(i)	<table><tr><th>Statements</th><th>Order</th></tr><tr><td>the switch is closed</td><td>1</td></tr><tr><td>the lamp is on</td><td>(6)</td></tr><tr><td>the armature is attracted</td><td>3</td></tr><tr><td>the contacts are pushed together</td><td>5</td></tr><tr><td>the electromagnet is magnetised</td><td>2</td></tr><tr><td>the armature rotates</td><td>4</td></tr></table> <p>all five numbers in correct positions = 3 marks;;; three-four numbers in correct positions = 2 marks only;; one-two numbers in correct positions = 1 mark only;</p>	Statements	Order	the switch is closed	1	the lamp is on	(6)	the armature is attracted	3	the contacts are pushed together	5	the electromagnet is magnetised	2	the armature rotates	4	3
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Total for question 2 = 10 marks