Name of the Student:_____
Max. Marks : 23 Marks **Time : 23 Minutes**

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
(i)	An answer that provides a description by making reference to: • concentration/density (of iron filings) (1) • greatest at strongest field (1)	(filings) close together / bunched up	(2)

Question number	Answer	Mark
(ii)	An answer that combines the following points to provide a logical description of the method: • use of (plotting) compass(es) (1) • (place) at various different points (around the magnet) (1) • the direction is the way the compass points (1)	(3)

Q2.

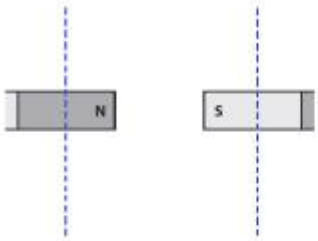
Question Number:	Answer	Additional guidance	Mark
	a description to include: use a compass (1) always points in the same direction / will point north (1)	 accept reasonable alternatives such as suspended magnet needles on cork in water	**(2)** AO 3 2a

Q3.

Question number	Answer	Additional guidance	Mark
(i)	(magnetic field) {lines / circles / pattern} closer (together at P) (1)	(magnetic field) lines more concentrated (at P) (magnetic field) lines further apart / less concentrated at Q ignore idea that P is closer (to the wire than Q)	**(1)** **AO1**

Question number	Answer	Additional guidance	Mark
(ii)	a description to include as current increases magnetic field strength increases (1) linear/ increases in even steps / doubling idea / proportional (1)	allow positive correlation 'directly proportional' scores 2 marks	**(2)** **AO3**

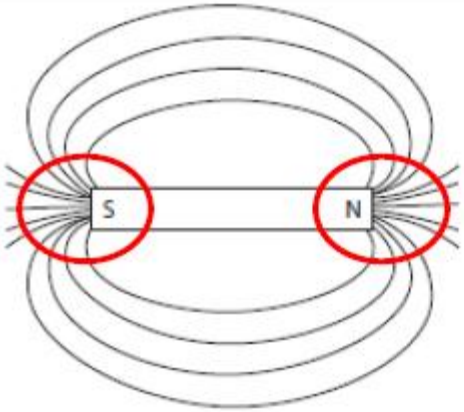
Q4.

Question	Answer	Additional guidance	Mark
(i)	at least 1 straight line between the N and S (1) at least 1 curved line between N and S (1)	 ignore lines that start or end outside the region identified do not accept any contradictory lines within the region ignore any arrows	**(2)** **AO2.2**

Question	Answer	Additional guidance	Mark
(ii)	(it would) move towards the other magnet (1)	idea of attraction/joining together	**(1)** **AO3.3**

Q5.

Question	Answer	Additional guidance	Mark
(i)	arrow(s) going from N to S on any field line (1)	any contradictory arrow loses the mark	(1) AO1.1

Question	Answer	Additional guidance	Mark
(ii)	**X** drawn close to N or S (1)	 any X drawn outside either ellipse loses the mark - judge by eye	(1) AO1.1

Question	Answer	Additional guidance	Mark
(iii)	**one** reason from: where the (field) lines are close(st) (to each other) (1) close to the pole(s) (1)	 accept where there are most lines ignore close to the magnet	(1) AO1.1

Q6.

Question number	Answer	Additional guidance	Mark
(i)	(soft) iron (1)	allow (in this context) nickel (alloys) cobalt steel	**(1)** **AO1**

Question number	Answer	Additional guidance	Mark
(ii)	would be magnetised (when switch is closed) (1) would be demagnetised when switch is open (1)	(is) magnetic (is) electromagnetic induced magnetism magnetism can be switched off accept for either mark not permanent magnet **or** temporary magnet	**(2)** **AO1**

Q7.

Question Number:	Answer	Mark
	B iron **The only correct answer is B** ***A*** *is not correct as copper is non-magnetic* ***C*** *is not correct as plastic is non-magnetic* ***D*** *is incorrect, as steel is only suitable for a permanent magnet*	**(1)** AO 1 1

Q8.

Question Number:	Answer	Additional guidance	Mark
(i)		N must be at the end of the bar, not at the end of the compass needle	(1) AO 3 3a

Question Number:	Answer	Additional guidance	Mark
(ii)	any two developments from:	marks can be taken from text or diagram	(2) AO 3 3a
	use a compass in various positions / more compasses (1)	allow 'around' 'on', 'near' the magnet etc	
	plot more points/mark direction of compass(point)/ join the dots (1)	series of dots / several compasses end to end	
	sprinkle/add iron filings (1)		
	give more than one (magnetic field) line (1)		