Name of the Student:_____

Max. Marks : 19 Marks **Time : 19 Minutes**

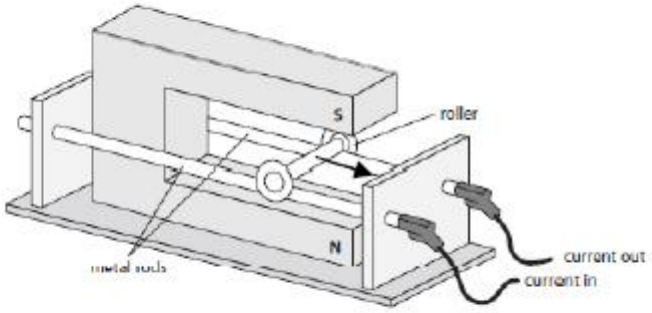
Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
i	substitution (1) (F=) 1.2 x2.5 x0.06 evaluation (1) 0.18 (N)	award full marks for the correct answer without working	(2)

Question number	Answer	Additional guidance	Mark
(ii)	a description to include first finger, second finger and thumb (of left-hand) held mutually perpendicular (1) first finger (is in the direction of) magnetic field OR second finger (is in the) direction of) current (1) thumb (is in the) direction of force / motion (1)	award 1 mark for attempt at mutually perpendicular shown in a diagram diagram relating thumb and fingers to correct quantities at right angle gains 3 marks	(3)

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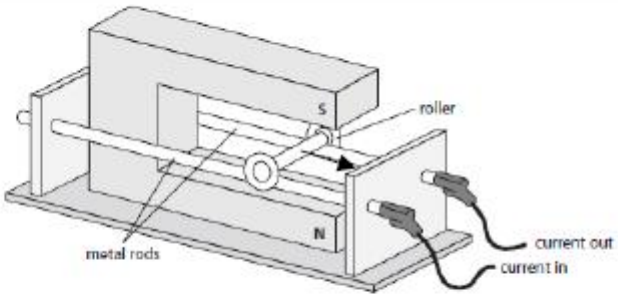
Question number	Answer	Additional guidance	Mark
(iii)	 arrow from roller towards contacts (1)		(1)

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Q2.

Question number	Answer	Additional guidance	Mark
(i)	substitution (1) (F=) 1.2 x2.5 x0.06 evaluation (1) 0.18 (N)	award full marks for the correct answer without working	(2)

Question number	Answer	Additional guidance	Mark
(ii)	a description to include first finger, second finger and thumb (of left-hand) held mutually perpendicular (1) first finger (is in the direction of) magnetic field OR second finger (is in the direction of) current (1) thumb (is in the direction of) force / motion (1)	award 1 mark for attempt at mutually perpendicular shown in a diagram diagram relating thumb and fingers to correct quantities at right angle gains 3 marks	(3)

Question number	Answer	Additional guidance	Mark
(iii)	 arrow from roller towards contacts (1)		(1)

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Q3.

Question number	Answer	Additional guidance	Mark
	rearrangement and substitution (1) $\left(B = \frac{F}{I \times l}\right)$ $= \frac{1.11 \times 10^{-5}}{93(.1 \times 10^{-3}) \times 0.6(000)}$ evaluation (1) 2.0×10^{-4} (T)	0.0002 (T) accept any number that rounds to 2.0×10^{-4} (T) e.g. 1.989×10^{-4} (T) any number that rounds to 2.0×10^{-7} (T) e.g. 1.987×10^{-7} (T) is awarded 1 mark only award full marks for the correct answer without working	**(2)** **AO2.1**

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Q4.

Question number	Answer	Additional guidance	Mark
	rearrangement and substitution (1) $(B = \frac{F}{I \times l})$ $= \frac{1.11 \times 10^{-5}}{93(.1 \times 10^{-3}) \times 0.6(000)}$ evaluation (1) 2.0×10^{-4} (T)	0.0002 (T) accept any number that rounds to 2.0×10^{-4} (T) e.g. 1.989×10^{-4} (T) any number that rounds to 2.0×10^{-7} (T) e.g. 1.987×10^{-7} (T) is awarded 1 mark only award full marks for the correct answer without working	**(2)** **AO2.1**

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Q5.

Question number	Answer	Additional guidance	Mark
	any **three** from	marks can be awarded from a correctly labelled diagram	**(3)** **AO1**
	magnetic **fields** interact (1)	magnets are in each other's magnetic **field**	
	(force due to) repulsion (between magnets) (1)	repel / push away	
	(repulsion) force upwards (on upper magnet) (1)		
	weight / gravitational force (downwards on upper magnet) (1)	accept gravity (acts downwards)	
	forces equal size / in equilibrium (1)	forces are balanced	
		ignore references to charge	

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