Name of the Student:_____
Max. Marks : 21 Marks **Time : 21 Minutes**

Mark Schemes

Q1.

Question number	Answer	Additional guidance	Mark
	conversion of time (1) 1 x 60 (s) substitution (1) (I =) $\frac{9000}{230 \times 60}$ evaluation (1) (I =) 0.65 (A)	 any value that rounds to 0.65; e.g. 0.65217 0.7 0.6 award full marks for the correct answer without working allow 2 marks for answer of 39(.130)	**(3)** **AO2**

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Q2.

Question Number	Answer	Additional guidance	Mark
(i)	substitution (1) $(\Delta Q) = 1.5 \times 4200 \times 50$ evaluation (1) 320 000 (J)	 accept 315 000 (J) 310 000 (J) award full marks for the correct answer without working 320 000 000 315 000 000 310 000 000 score 1 mark (mass in grams)	**(2)**

Question Number	Answer	Additional guidance	Mark
(ii)	substitution (1) $3500 = \frac{670\,000}{t}$ rearrangement (1) $(t=) \frac{670\,000}{3500}$ evaluation (1) 190(s)	accept substitution and rearrangement in either order accept any answer that round to 190(s) power of ten error award 2 marks maximum award full marks for the correct answer without working	**(3)**

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Q3.

Question number	Answer	Additional guidance	Mark
	substitution (1) (E =) 0.042 x 1.5 evaluation (1) (E =) 0.063 (J) (1)	 6.3×10^{-2} award 2 marks for the correct answer without working accept 0.063 to any other power of 10 for 1 mark	**(2)** **AO2**

Q4.

Question number	Answer	Additional guidance	Mark
(i)	substitution (1) (power =) 12000 x 0.64 evaluation (1) R = 7700 (W)	 allow (power =) 240 x 32 any answer that rounds to 7700 (W) e.g. 7680 (W) award full marks for the correct answer without working	**(2)** **AO3**

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Question number	Answer	Additional guidance	Mark
(ii)	substitution (1) ($\frac{\text{number of turns in secondary coil}}{\text{number of turns in primary coil}}$ =) $\frac{1600}{80000}$ or $\frac{1}{50}$ evaluation (1) 0.02(0)	0.02(0) to any other power of 10 scores 1 mark award full marks for correct answer without working accept for 1 mark (seen anywhere) $\frac{50}{1}$, $\frac{80000}{1600}$, 50 **or** (from counting turns) $\frac{4}{15}$, 0.27	**(2)** **AO2**

Question number	Answer	Additional guidance	Mark
(iii)	(ratio =) 240 : 12000 (1) 1 : 50 (1)	0.02 : 1 award full marks for correct answer without working	**(2)** **AO2**

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Q5.

Question	Answer	Additional guidance	Mark
(i)	substitution (1) $(P =) \ \frac{130\,000}{87}$ evaluation (1) $(P =)$ 1494 (W) value to 2sf (1) 1500 (W)	award two marks for the correct answer without working independent mark for **any** number to 2sf	**(3)** **AO2.1**

Question	Answer	Additional guidance	Mark
(ii)	substitution (1) (efficiency =) $\frac{96\,000}{130\,000}$ evaluation (1) (efficiency =) 0.74	accept values that round to 0.74 e.g. 0.7385 accept 74 % for 2 marks allow 74 without % sign for 1 mark only allow 0.73 or 73% for 1 mark award full marks for the correct answer without working	**(2)** **AO2.1**

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