Q1.

Question Number:	Answer	Additional Guidance	Mark
(ii)	substitution into $\frac{V_p}{V_s}=\frac{N_p}{N_s}$ (1) $\frac{25}{V_s}=\frac{30}{150}$ rearrangement (1) $V_s=\frac{25\times150}{30}$ evaluation (1) (V_s =) 130 (V)	substitution and rearrangement in either order $\frac{V_s}{25}=\frac{150}{30}$ allow 120 or 125 award full marks for correct answer without working	**(3)** AO 2 1

Q2.

Question number	Answer	Additional guidance	Mark
	use of $\frac{V_p}{V_s}=\frac{N_p}{N_s}$ (1) transformation and evaluation (1) (N_s=) 25	award full marks for correct answer without working	**(2)**

Q3.

Question number	Answer	Additional guidance	Mark
	substitution into $\frac{Vp}{Vs} = \frac{Np}{Ns}$ (1) $\frac{230}{15} = \frac{600}{Ns}$ Rearrangement and evaluation (1) $(Ns =)\ \frac{600 \times 15}{230}$ = 39	allow substitution and rearrangement in either order accept values that round to 39 e.g. 39.13 award full marks for the correct answer without working. if no other marks scored then award 1 mark for answers of that round to 0.026 (eg 0.255) (substitution mark)	**(2)** **AO2**

Q4.

Question number	Answer	Additional guidance	Mark
(i)	{step up/increase}(output) voltage or {stepdown/ decrease}(output) current		**(1)**

Question number	Answer	Additional guidance	Mark
(ii)	substitution (1) $\frac{230}{V_s} = \frac{18}{26}$ rearrangement (1) $(V_s =) \frac{230 \times 26}{18}$ evaluation (1) 330(V)	substitution and re-arrangement in either order allow 332 (.2) (V) allow answers between322 (V) and 333 (V)where candidates have truncated an intermediate calculation 159.2 (V), 160 (V) gains 1 mark award full marks for the correct answer without working	**(3)**

Q5.

Question number	Answer	Additional guidance	Mark
	substitution into $\frac{V_p}{V_s} = \frac{N_p}{N_s}$ (1) $\frac{230}{V_s} = \frac{800}{18}$ rearrangment (1) $(V_s =) \frac{18 \times 230}{800}$ evaluation (1) (Vs =) 5.2 (V)	alternative method re-arrangement (1) $(V_s =) \frac{V_p \times N_s}{N_p}$ substitution (1) $(V_s =) \frac{18 \times 230}{800}$ evaluation (1) (Vs =) 5.2 (V) allow values that round to 5.2 (e.g. 5.175) award 1 mark for answers that round to 10 000 (e.g. 10 222) award full marks for correct answer without working.	**(3)** **AO2**

Q6.

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**

Q7.

Question Number	Answer	Additional guidance	Mark
(ii)	substitution into $\frac{Vp}{Np} = \frac{Vs}{Ns}$ (1) $\frac{230}{2000} = \frac{15}{Ns}$ rearrangement (1) $(N_S =) \frac{2000 \times 15}{230}$ evaluation (1) 130 (turns)	rearrangement and substitution can be in either order $\frac{230}{15} = \frac{2000}{Ns}$ using $\frac{Vp}{Vs} = \frac{Np}{Ns}$ accept answers that round to 130 or 131 (arising from rounding of intermediate evaluations) award full marks for the correct answer without working	(3)

Q8.

Question Number	Answer	Acceptable answers	Mark
(c)	Transposition (1) $V_s = V_p \times n_s/n_p$ Substitution (1) $(V_s =) \frac{12 \times 100}{2400}$ Evaluation (1) 0.5 (V)	 Substitution and transposition in either order i.e. if $\frac{12 \times 100}{2400}$ is seen this scores 2 If they sub Vp, Np and Ns correctly, ignore anything for Vs even a blank Calculation may be done using turns ratio Correct answer no working = full marks answer (no working) with POT error =2 (eg 5 or 0.05) Ignore powers of 10 until evaluation	**(3)**