

Name of the Student: _____

Max. Marks : 19 Marks

Time : 19 Minutes

Mark Schemes

Q1.

Question Number:	Answer	Additional Guidance	Mark
(i)	an explanation linking: (p.d. / current is only induced by a) changing magnetic field (1) a changing current (is needed to create a changing magnetic field) (1)	alternating magnetic field the voltage/current (as shown) is not changing	(2) AO 1 1

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) $V_s = \frac{25 \times 150}{30}$ evaluation (1) $(V_s =) \ 130 \text{ (V)}$	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
	selecting, rearranging and substituting (1) $(V_s = \frac{N_s}{N_p} \times V_p)$ $= \frac{400}{700} \times 230$ selecting, rearranging and substituting (1) $(I_p = \frac{V_s}{V_p} \times I_s)$ $= \frac{131(.429)}{230} \times 1.75$ evaluation (1) 1(.00) (A)	accept correct alternative calculation routes 1 mark for any voltage rounding to 130 V $\frac{130 \times 1.75}{230}$ 0.989 (A) using 130 award full marks for the correct answer without working	(3) A02.1

Q3.

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)

Q4.

Question number	Answer	Additional guidance	Mark
	substitution into $\frac{V_p}{V_s} = \frac{N_p}{N_s}$ (1) $\frac{230}{15} = \frac{600}{N_s}$ Rearrangement and evaluation (1) $(N_s =) \frac{600 \times 15}{230}$ $= 39$	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

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 between 322 (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)

Q6.

Question number	Answer	Additional guidance	Mark
	substitution into $\frac{V_p}{V_s} = \frac{N_p}{N_s}$ (1) $\frac{230}{V_s} = \frac{800}{18}$ rearrangement (1) $(V_s =) \frac{18 \times 230}{800}$ evaluation (1) $(V_s =) 5.2 \text{ (V)}$	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) $(V_s =) 5.2 \text{ (V)}$ 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