

Question number	Answer	Notes	Marks
6 (a) (i)	$\frac{\text{input voltage}}{\text{output voltage}} = \frac{\text{primary turns}}{\text{secondary turns}},$	allow standard symbols and rearrangements e.g. $V_p / V_s = N_p / N_s$ allow T, n for turns allow 1,2 in,out for p and s	1
(ii)	substitution; rearrangement; evaluation; e.g. $15/330 = 2600/N_s$ $N_s = 2600 \times 330 / 15$ $N_s = 57\,000$	allow kV or V for voltages -1 for POT error allow 57 200	3
(b)	any four from: MP1. step-up transformer increases voltage; MP2. step-up transformer decreases current; MP3. idea that $P_{in} = P_{out} / V_{in}I_{in}=V_{out}I_{out}$ (assuming 100% efficient); MP4. idea that transmission current is reduced; MP5. idea that energy losses are reduced; MP6. (because) current causes heating (in transmission cables); MP7. idea that step-down transformer used to reduce voltage to safe level;	credit ideas seen in diagram allow RA allow RA allow increasing the voltage decreases the current allow heating losses reduced	4

Total for Question 6 = 8 marks