

Question number	Answer	Notes	Marks
5 (a) i	Step down (transformer);		1
ii	$(V_P/V_S) = (N_P/N_S);$  $\frac{\text{input (primary) voltage}}{\text{output (secondary) voltage}} = \frac{\text{primary turns}}{\text{secondary turns}}$  $\frac{V_P}{V_S} = \frac{n_P}{n_S}$	Allow <ul style="list-style-type: none"> <li>equation in words</li> <li>standard abbreviations :- s, p, in, out, 1, 2</li> <li>N, n or T for number of turns</li> <li>Rearrangements e.g.  <math>(V_S/V_P) = (N_S/N_P)</math>  <math>V_S = (V_P) (N_S/N_P)</math>  <math>V_P = (V_S) (N_P/N_S)</math> </li> </ul>	1
iii	Substitution; (rearrangement and) evaluation; e.g. $\frac{230}{25} = \frac{\text{primary turns}}{100}$  920 (Turns)	Do not credit the equation in words or symbols          bald answer gains full marks	2

Question number	Answer	Notes	Marks
(b)	<p>Any 5 from</p> <p>MP1. it steps up or steps down the <b>voltage</b>;</p> <p>MP2. current in (primary) coil <b>produces</b> magnetic field;</p> <p>MP3. the current is changing /has frequency of 50 Hz;</p> <p>MP4. causing a (changing) magnetic field in the core;</p> <p>MP5. the core strengthens the magnetic field;</p> <p>MP6. field lines interact with (secondary) coil;</p> <p>MP7. which <b>induces</b> a voltage in the secondary coils;</p> <p>MP8. transformer won't work with (steady) d.c.</p>	<p>allow flux for magnetic field</p> <p>Allow increases or decreases voltage</p> <p>Allow concentrates for strengthens</p> <p>Allow flux changes in secondary coil</p> <p>Allow induces a current/eq</p> <p>NB do not credit repeat of stem</p>	5

(Total for Question 5= 9 marks)