Question number	Answer	Notes	Marks
5 (a)	substitution into $v^2 = u^2 + 2as$; rearrangement; evaluation; e.g. $75^2 = (0^2 +) 2 \times 4.1 \times s$ s = 5 625 / 8.2 (s =) 690 (m)	allow alternative method of finding the time taken and then using **average** speed = distance/time 1371-1372 = 2 marks allow 686, 685.9756…	3
(b) (i)	any two from: MP1. idea of radiation that is always present / present everywhere; MP2. idea of no 'obvious' source; MP3. any valid source of background radiation given e.g. radon/rocks/cosmic rays/medical or military activity/the Sun etc.;		2
(ii)	any three from: MP1. idea that excessive exposure time can be harmful/increases risk; MP2. idea that dosage is higher (at maximum height); MP3. idea that increased risk of cancer; MP4. idea that there is less atmosphere to absorb cosmic radiation; MP5. cosmic rays/radiation is increased;	allow cell mutation for cancer	3

(Total for Question 5 = 8 marks)

Question number	Answer	Notes	Marks
8 (a)	any four from: MP1. idea that step-down means secondary voltage is less than primary voltage; MP2. current in (primary) coil produces magnetic field; MP3. the current is changing / has frequency of 50 Hz; MP4. causing a (changing) magnetic field in the core; MP5. the core strengthens the magnetic field; MP6. the secondary coil experiences a changing magnetic field; MP7. which induces a voltage in the secondary coil;	 allow RA allow recognition that alternating current is used allow 'secondary is cut by (changing) field lines' allow current for voltage	4
(b) (i)	$(N_p/N_s) = (V_p/V_s)$;	allow any correct rearrangement allow "i(nput) and o(utput)" or "1 and 2"for "p(rimary) and s(econdary)" allow correct word equation ignore 'P' for 'N' condone 'T', 't' or 'n' for 'N' condone 'coils' for 'turns'	1
(ii)	substitution; rearrangement; evaluation; e.g. $(160/45) = 12/V_s$ $V_s = 12 / (160/45)$ $(V_s =) 3.4$ (V)	 allow 3.375 (V)	3

Total for Question 8 = 8 marks)