

Question number	Answer	Notes	Marks
3 (a)	insulator;	Allow 'non/not conductive'	1
(b)	any reference to electron transfer; loss (of electrons);	idea of 'loss of electrons (from tube)' scores 2. reject any reference to movement of positive charges	2
(c)	electrons move through wire; as they are attracted by or to the metal mast; idea that this makes metal mast neutral (again);	allow idea of 'opposite charges attracting' allow idea of 'to earth/earthing the mast' if no other mark scored	3
(d)	recall of equation $\text{energy} = \text{charge} \times \text{voltage}$; substitution or re-arrangement; evaluation; correct answer = 860 (V) e.g. $\text{energy} = \text{charge} \times \text{voltage}$ $\text{voltage} = \text{energy}/\text{charge} = 3.7/0.0043$ $\text{voltage} = 860.465\dots$ (V) $\text{voltage} = 860$ (V)	allow use of standard symbols e.g. $E = Q \times V$ reject C, c for charge -1 for PoT error	3
(e)	spark/discharge; damage/harm/injury/electrocution (of engineer);		2

Total for Question 3: 11 marks