

| Question number | Answer | Notes | Marks |
|-----------------|---|--|-------|
| 7 (a) (i) | B - joule per coulomb; A is incorrect because this is not a correct unit for volt C is incorrect because this is not a correct unit for volt D is incorrect this is not a correct unit for volt | | 1 |
| (ii) | energy (transferred) = charge \times voltage; | allow standard symbols and rearrangements | 1 |
| (iii) | substitution; conversion of kV to V; evaluation; e.g. energy = $1.6 \times 10^{-19} \times 150 \times 10^3$ energy = 2.4×10^{-14} (J) | | 3 |
| (b) (i) | charge = current \times time; | allow standard symbols and rearrangements | 1 |
| (ii) | substitution and re-arrangement; conversion of ms to s; evaluation; e.g. charge = current \times time current = $2.9 \times 10^{-8} / 0.68 \times 10^{-3}$ current = 4.3×10^{-5} (A) | accept conversion to microamps or milliamps provided micro- (μ) or milli- (m) clear on answer line allow 4.265×10^{-5} (A) | 3 |

Total for Question 7 = 9 marks