

## Assess Quizzes from the o-book – Explanations for the answers.

## Chapter 7 Review – Support

| Q  | Reason  |
|----|---|
| 1  | By definition. See page 208. It is true that the unit is <i>coulomb</i> but the unit symbol is C, not Q as one of the options has it. Q is the symbol for the <i>physical quantity</i> ‘electric charge’, which is measured in the unit <i>coulomb</i> , unit symbol C. It’s a trap and I am sorry if you fell in. But it is a good lesson for you. |
| 2  | By definition. See page 208.  |
| 3  | By convention. See page 208. In reality, it is the flow of negative charge carriers (electrons) that makes a current, but the conventional current is still the flow of positive charge. I know its stupid but there are historical reasons.  |
| 4  | $N = \frac{Q}{q_e} = \frac{5 \times 10^{-6}}{1.6 \times 10^{-19}} = 3.1 \times 10^{13}$   |
| 5  | $0.50 A = 0.50 \times 10^3 \times 10^{-3} A$<br>$= 0.50 \times 10^3 mA \text{ [milli means } 10^{-3}]$<br>$= 500 mA$  |
| 6  | $V = \frac{W}{Q}$<br>$W = VQ = 120 \times 10 = 1200 J \text{ (} 1.2 \times 10^3 J \text{)}$   |
| 7  | $W = Vq_e = 6.0 \times 1.6 \times 10^{-19} = 9.6 \times 10^{-19} J$   |
| 8  | By design, this is the way they are used. For ammeters see page 214. For voltmeters see page 220.   |
| 9  | $I = \frac{Q}{t}$<br>$Q = It$<br>$= 150 \times 10^{-3} \times 60$<br>$= 0.150 \times 60 \text{ [= } 9.0 C \text{]}$   |
| 10 | $N = \frac{10 \mu C}{1.6 \times 10^{-19} C/e} = \frac{10 \times 10^{-6} C}{1.6 \times 10^{-19} C/e}$<br>$= 6.25 \times 10^{13} e \text{ [but you didn't have to calculate this last line]}$   |

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## Chapter 7 Review – Consolidate

| Q | Reason  |
|---|---|
| 1 | $25mA = 25 \times 10^{-3} A = 0.025 A$  |
| 2 | $I = \frac{Q}{t}$ $Q = It$ $= 125 \times 10^{-6} C / s \times 1.0 s$ $= 125 \times 10^{-6} \times 1$  |
| 3 | $I = \frac{Q}{t}$ $Q = It$ $= 5.0 \times 10^{-6} \times (20 \text{ min} \times 60 \text{ s} / \text{min})$ $= 6000 C$                                 |
| 4 | $P = VI$ $I = \frac{P}{V} = \frac{1200}{240} = 5 A$   |
| 5 | $I = \frac{Q}{t} = \frac{2.0 \times 10^{13} q_e \times 1.6 \times 10^{-19} C / q_e}{15}$ $= \frac{2.0 \times 10^{13} \times 1.6 \times 10^{-19}}{15}$ |

**Assess Quizzes from the o-book – Explanations for the answers.****Chapter 7 Review – Extend**

| Q | Reason  |
|---|---|
| 1 | $P_1 = V_1 I_1$<br>$P_2 = 2V_1 \times 2I_1 = 4(V_1 I_1) = 4 \times P_1$<br><i>four times (quadrupled)</i>               |
| 2 | There is an increase in electric potential (voltage) therefore it is a battery  |
| 3 | There is a decrease in electric potential (voltage) therefore it is a resistor or resistance wire                       |
| 4 | $P = VI = 6 \times 0.5 = 3W$  |
| 5 | No parallel sections so current is constant, thus the rate of flow of charge (= current) is also constant in all parts. |