

Electricity calculations assignment – answers - /76

1a	Charge (coulombs) = Current (amps) x time (seconds)
1b	Voltage (volts) = Energy (joules) / Charge (coulombs)
1c	Voltage (volts) = Current (amps) x Resistance (ohms)
1d	Power (watts) = Voltage (volts) x Current (amps)
1e	Power (watts) = Energy transferred (joules) / time (seconds)
1f	Energy (joules) = Voltage (volts) x Current (amps) x time (seconds)
2a	1 amp = 1 coulomb per second
2b	1 volt = 1 joule per coulomb
2c	1 watt = 1 joule per second
3	$Q = I \times t = 0.5 \times (2 \times 60) = 60C$
4	$I = Q/t = 180/30 = 6A$
5	$t = Q / I = 45 / 0.3 = 150s$
6	12 Volts = 12 J / C, 12 Joules
7a	$V = 2 \times 3 = 6V$
7b	6 Volts = 6 J / C, 6 Joules
8	$P = V \times I = 12 \times 2 = 24W$
9a	$P = V \times I = 240 \times 6 = 1440 W$
9b	$E = P \times t = 1440 \times (20 \times 60) = 1\,728\,000 J$
10	$I = P / V = 1200 / 240 = 5A$
11	$I = P / V = 45 / 3 = 15, 15/3 = 5 \text{ cells}$
12	$R = V / I = 12 / 3.5 = 3.4 \Omega$
13	$V = I \times R = 1.3 \times 10 = 13V$
14	$I = V / R = 8 / 30 = 0.27A$
15a	$I = V / R = 5 / 20 = 0.25A$
15b	$P = V \times I = 5 \times 0.25 = 1.25W$
15c	$Q = I \times t = 0.25 \times 80 = 20C$
15d	$E = P \times t = 1.25 \times 80 = 100J$

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