01. 0625_s22_ms_41 Q: 5

Question	Answer	Marks
(a)	temperature	**B1**
	at which liquid becomes a gas **or** liquid and gas exist together	**B1**
(b)(i)	1.8×10^5 J	**A2**
	(E =) VIt (in any form) **or** $230 \times 13 \times 60$ **or** 230×13 **or** 3000	C1
(b)(ii)	9.1×10^{-3} kg / s **or** 9.1×10^{-3} kg / s	**A4**
	(ΔT =) 100 – 22 **or** 78 **or** (ΔT =) 100 – 22 **or** 78	C1
	$m = E / c\Delta T$ (in any form) **or** $1.8 \times 10^5 / (4200 \times 78)$ **or** (rate =) $P / c\Delta T$ (in any form) **or** $m = E / c\Delta T$ **and** $E = Pt$	C1
	$1.8 \times 10^5 / (4200 \times 78 \times 60)$ **or** 5.5×10^N **or** $9.1/9.2 \times 10^N$ **or** $3000 / (4200 \times 78)$ **or** $230 \times 13 / (4200 \times 78)$ **or** $9.1 / 9.2 \times 10^N$	C1
(c)	1 if the tap becomes live **or** if the (live) cable touches the (metal) tap	**B1**
	there is a current to earth / in the earth wire (which blows the fuse)	**B1**
	2 the current (in earth wire) is large **and** fuse melts / blows / stops current / breaks circuit	**B1**

02. 0625_w21_ms_43 Q: 8

Question	Answer	Marks
(a)		**B2**
	five straight, parallel vertical lines, equally spaced by eye, between plates	B1
	arrow head pointing upwards on at least one line and none wrong	B1
(b)(i)	11 A	**A2**
	(I =) P / V in any form OR 2400 = I220	C1
(b)(ii)	9900 C OR 9800 C	**A2**
	(Q =) It in any form OR (Q =) $11 \times 15 \times 60$	C1
(b)(iii)	13 A	**B1**

03. 0625_w20_ms_41 Q: 8

Question	Answer	Marks
(a)	(related to) energy supplied in driving charge in a circuit / conductor **or** property of source / battery / cell / power supply	**B1**
	energy supplied per / to unit charge **or** energy transferred to electrical energy **or** from other form of energy **or** energy in driving charge around a complete circuit	**B1**
(b)(i)	($I = V \div R = 240 \div 30 =$) 8.0 A	**B1**
(b)(ii)	($P =$) VI **or** 240×8.0	**C1**
	1900 W	**A1**
(b)(iii)1	half (the size)	**B1**
	(equal voltage / p.d. / e.m.f. and) resistance is twice the size **or** I and R are inversely proportional	**B1**
(b)(iii)2	(fuse rating =) 13 A / 14 A / 15 A / 16 A / 17 A / 18 A / 19 A	**B1**
	total current is 12.1 A	**B1**

04. 0625_w20_ms_42 Q: 8

Question	Answer	Marks
(a)	conditions (outdoors) may be damp / wet	**C1**
	water conducts (electricity) OR clear statement of need for waterproof / outdoor specification (components)	**A1**
(b)	protects components / appliances / circuit / wires / user / mains supply prevents electrical supply overheating / fires / electrocution / shocks	**B1**
	excess current / power in circuit / wires OR fuse melts / blows OR circuit breaker opens	**B1**

05. 0625_s19_ms_43 Q: 8

(a)	$P = VI$ in any form	**C1**
	I ($= \frac{700}{240}$) = 2.9 A	**A1**
(b)	13 A fuse	**B1**
	any **two** out of: 2.9 + 7.5 SEEN if too low it would break / blow / melt when the appliances are operating normally if fuse too high wouldn't break / blow until current was too high which would be dangerous (to people /wires /appliance)	**B2**
(c)	(Resistance inversely proportional to area so) resistance of thicker wire is lower	**B1**
	Fuse will melt at higher current	**B1**
	because heating effect = $I^2 R$ OR less heating effect (for same current) owtte	**B1**
(d)(i)	Any **two** renewable sources of energy from: solar, wind, water, hydroelectric, waves, tidal, geothermal	**B2**
(d)(ii)	Any relevant disadvantage for one of their correct answers to **(d)(i)** e.g.: Energy for wind / waves / Sun not always available Cost of building wind turbines or tidal barrages or hydroelectric dams Wind turbines affect the scenery of some areas Solar (farms) use (agricultural) land / takes up a lot of space	**B1**

06. 0625_w19_ms_41 Q: 6

(a)(i)	$I = P / V$ **or** in any form words, symbols or numbers **or** (I =) P / V **or** 9000 / 230 39 A			**C1** **A1**
(a)(ii)	40 A **or** any greater integer value (in A) up to and including 60 A			**B1**
(b)	$E = Pt$ **or** in any form words, symbols or numbers **or** (E =) Pt **or** 9000 × 1.0 **or** 9000 J seen 35 – 16 **or** 19 (°C) seen $m = E /(c\Delta T)$ **or** in any form words, symbols or numbers **or** (m =) $E /(c\Delta T)$ **or** 9000 / (4200 × 19) 0.11 kg			**C1** **C1** **C1** **A1**
(c)(i)	two different metal wires joined at one end **and** voltmeter between free ends	**or**	three metal wires **and** two different joined ABA **and** voltmeter between free ends	**B1** **B1**
(c)(ii)	any **one** from: quick response / makes measurements fast measures rapidly varying temperatures electrical output small heat capacity robust / rugged			**B1**