




Electricity Answers

- | | | | |
|------|---|----------------------|------|
| 1) A | (a) (i) parallel | B1 | |
| | (ii) 4.2 (V) | B1 | |
| | (iii) $V=IR$ in any form OR V/R
4.2 / 3 e.c.f. (ii)
1.4 e.c.f. (ii)
A OR amp(s) OR ampere(s) | C1
C1
A1
B1 | |
| | (iv) 1. bigger OR the sum of the two currents OR 2 (A)
2. same/equal | B1
B1 | |
| | (b) clear series connection of all 3 across battery in one circuit
clear parallel connection of all 3 across battery in other circuit, and must not be shorted out
allow B1 max in (b) if correct series/parallel circuits both shown, but with more or less than 3 resistors in either/both | B1
B1
B1 | [10] |
| 2) | (a) all 3 lamps in parallel across battery + switch
(−1 if any lamps in series, −1 if connections across battery only) | B2 | |
| 3) | (a) charge(s) OR electron(s)
moving/flowing | M1
A1 | |
| | (b) (i) conductor(s) | B1 | |
| | (ii) metal or any named metal | B1 | |
| | (c) (i) insulator(s) ignore bad conductors | B1 | |
| | (ii) any sensible example of an insulating <u>material</u> | B1 | [6] |
| 4) | (a) series | B1 | |
| | (b) (i) anticlockwise current clearly indicated | B1 | |
| | (ii) voltmeter connected across R only | B1 | |
| | (c) (i) rheostat OR <u>variable</u> resistor | M1 | |
| | (ii) change resistance/current | A1 | |
| | (d) (i) 1.5 (A) | B1 | |
| | (ii) $R = V/I$ in any form
6/1.5 e.c.f. (i)
4 e.c.f. (i)
Ω OR ohm(s) | C1
C1
A1
B1 | |
| | (e) battery OR cell | B1 | [11] |

Electricity Answers

- 5)
- (a) (i) limit/control current OR adjust resistance B1
- (ii) ammeter shows a reading B1
- (iii) copper and iron ticked –1 e.e.o.o. B1
- (b) (i) voltmeter NOT voltameter B1
- (ii) voltmeter shown in parallel to heater
(condone incorrect symbol if clear it is a voltmeter) NO e.c.f. from (i) B1
- (c) (i) top heater and switch correctly connected B1
middle 2 heaters and switch correctly connected B1
- (ii) $R = V/I$ in any form C1
250/2.5 C1
100 A1
ohm OR Ω B1
- (iii) smaller ticked B1 [12]
- 6)
- (a) (i) iron OR ferromagnetic B1
unmagnetised (before being brought near magnet) NOT non-magnetic B1
- (ii) magnet B1
- (b) attracts (at first) NOT goes towards B1
repels after touching OR angle of thread increases as XY decreases B1 [5]
- 7)
- (a) (i) charge(s) OR electron(s) NOT ions B1
- (ii) (an) ammeter B1
- (iii) (a) voltmeter B1
- (b) ($R =$) V/I in any form C1
9.6/0.8 C1
12 A1
 Ω OR ohm(s) OR volt/amp OR volts per amp B1
- (c) (i) increases B1
- (ii) decreases OR e.c.f. from (i) B1
- [Total: 9]**

Electricity Answers

- 8)
- (a) any variation of  allow  and  B1
- (b) (i) plug switch M1
- (ii) exposed metal or equivalent OR not insulated OR (easy to get) shock A1
- (c) (i) pull-cord switch B1
- (ii) idea that water/moisture conducts ignore shock B1
covering/plastic/nylon is an insulator OR no metal is exposed B1
- (d) 3 lamps connected in parallel with each other B1
NOT if shorted out by switch or extra wire
lamp combination (e.c.f.) in series with switch (e.c.f.) and supply
accept any recognisable symbol, accept closed switch B1
- [Total: 8]**
- 9)
- (a) line with negative slope throughout B1
negative intercept on I axis B1
- (b) $R = V/I$ in any form C1
 $2/5$ C1
 0.4 (A) A1
- (c) (i) 20 (Ω) B1
- (ii) 0.1 (A) B1
- (d) idea of current halved, so resistance doubled C1
 5 OR 5.0 (Ω) A1
- (e) heating and magnetism ticked -1 e.e.o.o. B2
- [Total: 11]**

Electricity Answers

- 10) (a) (i) meter 2 }
 (ii) ammeter } mark (a) and (b) together, B1
- (b) (i) meter 1 }
 (ii) voltmeter } any 2 correct B1
 remaining 2 correct B1 B1
- (c) (i) 1.6 (V) B1
- (ii) $R = V/I$ in any form OR V/I C1
 1.6/ 0.8 OR e.c.f. from (c) (i)/0.8 C1
 2 or 2.0 A1
 ohm(s) OR Ω B1
- (iii) straight line through origin OR any V/I gives same value B1
- (iv) greater slope OR bigger V needed for same I o.w.t.t.e. B1
- (v) wire B AND larger resistance from longer wires o.w.t.t.e. B1
- [10]
- 11) (a) (i) L1 and L2 B1
- (ii) L2 and L3 B1
- (b) L1 off }
 L2 full } - 1 e.e.o.o. B2
 L3 off }
- L1 partial }
 L2 partial } - 1 e.e.o.o. B2
 L3 partial }

[6]