MAINS ELECTRICITY

1. The fuse melts and switches off the circuit. [1m]
New path has less or zero resistance, so very high current flows [1m]

2. Solution

a. I = V/R

120/576

= 0.21 A

b. P =IV = (0.21 A)(120 V) = 25 W[2m]

3. (a)(i) piece missing
(accept hole in case/cracked/broken or words to that effect)
(a)(ii) access to live part(s)
(accept -could get a shock)

(a)(iii) Fuse
(ignore any reference to rating e.g. 13 A)

(a)(iv) fuses/melts/will not conduct (electricity)
(allow 'gets hotter')

(b)(i) plastic does not conduct (electricity)/is an insulator (of electricity)

(b)(ii) it is earthed/there is an earth wire

4. (a) green and yellow / yellow and green;
blue; brown; 3

(b) (i) Any two from:
1. needs 3 wires / earth;
2. largest current;
3. largest power;
4. smallest resistance; 2

(ii) TV;
smallest power / current / uses less energy; 2
[Independent marks]

(iii) A calculation to include:
1. power × time;
2. 2.2 × 0.5;
3. 1.1; 3
[If 2.2 × 30 ® 66 - 2 marks

If 2200 × 30 ® 6600 - 1 mark
If 2200 × 0.5 ® 1100 - 2 marks]
[Equation can be implied by numbers]

[10]

5. green and yellow / yellow and green;
blue; brown; 3

6.

(i)	earth	1
(ii)	plastic/lamp/cover/base made from insulator/does not conduct electricity	1
	doubly insulated or plastic/lamp/cover/base cannot be live or cannot electrocute/shock	1
(iii)	100 J (100 J/s first mark only)	1
	(electrical)(energy) used/transformed/converted/delivered/arrives per second	1
(iv)	P = VI (in any form numerical or algebraic)	1
	0.43(48) (accept 1 sig.fig.)	1
	Fuse: 0.5/1.0/2.0/3.0 A	1
(v)	VIt or Pt (in any form numerical or algebraic)	1
	30 × 60 or 1800 (s) seen	1
	180 000 J (3000 J 2/3; 0.05 kWh 3/3)	1
		[Total11]