

## MARK SCHEMES – Physics Unit 2 Homework

- 1) (a) earth 1
- (b) it can prevent an electric shock from the toaster 1
- (c) 230 V 1
- (d) (the potential difference) for the alternating supply changes direction  
*allow current* 1
- (the potential difference) for the alternating supply changes magnitude  
*allow current*  
*allow converse*  
*allow potential difference of alternating supply is greater* 1
2. (a) 17.8  
*accept 17.7 or 17.9* 1
- (b) potential difference = current  $\times$  resistance  
*accept  $V = IR$*  1
- (c)  $3.22 = 2.18 \times R$  1
- $R = 3.22/2.18$  1
- $R = 1.477(064\dots) \Omega$  1
- $R = 1.48 (\Omega)$   
*an answer of 1.48 ( $\Omega$ ) scores 4 marks*  
*an answer that rounds to 1.48 ( $\Omega$ ) scores 3 marks* 1
- (d) temperature of wire will increase during experiment  
*allow description of this in terms of energy being dissipated,  $P = I^2R$*  1
- if constantan is used, this will not have a significant effect on results 1
3. (a) renewable resources are replenished  
*allow the converse*

1

(at least) as fast as they are used up

1

(b) (step-up) transformer between power station and grid increases p.d.

1

giving lower current

**or**

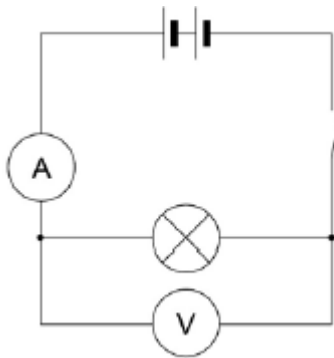
more efficient transmission

1

(step-down) transformer between grid and domestic users decreases pd

1

4) a)



*battery connected correct way round*

1

*ammeter and voltmeter correct way round*

1

(b) (the lamp will) get dimmer

1

because increasing the resistance decreases the current

1

(c) 20 minutes = 1200 seconds

1

$$10\ 000 = I \times 1200$$

1

$$I = 10000 / 1200$$

1

$$= 8.3$$

1

*allow 8.3 with no working shown for 4 marks*

Amps (A)

1