**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 × resistance

*accept V = I R*

**1**

(c)     3.22 = 2.18 × R

**1**

R = 3.22/2.18

**1**

R = 1.477(064...) Ω

**1**

R = 1.48 (Ω)

*an answer of 1.48 (Ω) scores****4****marks*

*an answer that rounds to 1.48 (Ω) scores****3****marks*

**1**

(d)     temperature of wire will increase during experiment

*allow description of this in terms of energy being dissipated, P = I2R*

**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 x 1200

**1**

*I = 10000 / 1200*

**1**

= 8.3

**1**

*allow 8.3 with no working shown for****4*** *marks*

Amps (A)

**1**