**M1.**          (a)     (i)      24(V)

**1**

(ii)     current always flows in the same direction

**or** current only flows one way

**1**

(b)     (i)      more power / force needed

*accept energy transformed faster*

**1**

         work done to lift the scooter uphill

*accept it moves against gravity*

**or** work done against gravity

*accept energy is transformed to gravitational potential energy*

**1**

(ii)     reduces it

**1**

(c)     375

***1*** *mark for correct substitution****1*** *mark for an answer = 250****1*** *mark for an answer = 125*

**2**

**[7]**

**M2.**          (a)     (i)      13A

*for 1 mark*

**1**

(ii)     fuse heated melts owtte / blows / burns out **Not** explodes / burns  
circuit breaks

*any 2 for 1 mark each*

**2**

(b)     (i)      2750 × 6 or 2.75 × 6

*gains 1 mark*

**but**16.5

*gains 2 marks*

**2**

(ii)     2750 × 6 × 7 or 2.75 × 6 ×7 or (b)(i) × 7 or kW h × cost / kW h

*gains 1 mark*

**but**115p or 116p or 115.5p or £1.16 or £1.15

*gains 2 marks*

**2**

**[7]**

**M3.**          (a)     (i)      P = V × 1

**or** equivalent

*credit a triangle if part (ii) correctly uses the relationship*

*credit power = volts × amps* ***or*** *watts V × A*

*do not accept C for current*

**1**

(ii)     (P = 230 × 10 =) 2300

*credit 2.3*

**1**

         W **or** J/s

*kW*

**1**

(b)     (i)      15 A

*credit 13 A* ***or*** *amps*

**1**

(ii)     any **three** from

earth

         any short (to the metal tank) causes fuse to blow

fuse is in the live wire

to prevent damage to the heater

*credit to stop the current*

**3**

(c)     (i)      V = I × R

**or** equivalent

*credit a triangle if part (ii) correctly uses the relationship*

**1**

(ii)     (230 = 10 × R =) 23

ohms **or** Ω

**2**

**[10]**