**Name of the Student**:_____
**Max. Marks : 21 Marks** **Time : 21 Minutes**

Mark Schemes

## Q1.

(a) to vary the current.

**1**

(b) the temperature of the filament increases

*allow the filament heats up*

**1**

(c) E = 12 × 8.5

**1**

E = 102 (J)

*an answer of 102 (J) scores **2** marks*

**1**

(d) (LED lamp)

longer lifetime (per lamp)

**1**

wastes less energy

**or**

lower input energy (for same light energy output)

**1**

**[6]**

## Q2.

(a) electrons

**1**

(b) a positive

**1**

(c) the forces are repulsive

*allow the forces act in opposite directions*

**1**

the forces are equal in size

*allow the forces are the same (size)*

**1**

(d) reproducible

**1**

**[5]**

## Q3.

(a) changes

*allow reverses*

**1**

(b) dependent

**1**

(c) kettle **C**
**or**
2.8 kW

**1**

highest power (output)

*allow higher power (output)*

**1**

(d) values for gradient calculation shown on graph or on answer lines

**1**

power input = 2200 (W)

*accept an answer that rounds to 2200 (W) for **2** marks*

**1**

(e) charge flow = current × time

*allow Q = It*

**1**

(f) 2400 = I × 250

**1**

$$I = \frac{2400}{250}$$

**1**

I = 9.6 (A)

*an answer of 9.6 (A) scores 3 marks*

**1**

**[10]**