

Name of the Student: _____

Max. Marks : 25 Marks

Time : 25 Minutes

Mark Schemes

Q1.

- | | | |
|-----|---|------------|
| (a) | any two from: | |
| | <ul style="list-style-type: none"> • nuclear • oil • (natural) gas | 2 |
| (b) | 4 (hours) | 1 |
| (c) | a system of cables and transformers | 1 |
| (d) | The power output of wind turbines is unpredictable | 1 |
| (e) | 1500 / 0.6 | 1 |
| | 2500 (wind turbines) | 1 |
| | <i>allow 2500 with no working shown for 2 marks</i> | |
| (f) | Most energy resources have negative environmental effects. | 1 |
| | | [8] |

Q2.

- | | | |
|-----|--|---|
| (a) | current that is always in the same direction | 1 |
| (b) | total resistance = 30 (Ω) | 1 |
| | $V = 0.4 \times 30$ | 1 |
| | 12 (V) | 1 |
| | <i>allow 12 (V) with no working shown for 3 marks</i>
<i>an answer of 8 (V) or 4 (V) gains 2 marks only</i> | |
| (c) | $P = 0.4 \times 12 = 4.8$ | 1 |

5 (W)

1

allow 5 (W) with no working shown for 2 marks

allow 4.8 (W) with no working shown for 1 mark

[6]

Q3.

- (a) battery, lamp and ammeter connected in series with variable resistor

1

voltmeter in parallel with (filament) lamp

1

- (b) **Level 2 (3–4 marks):**

A detailed and coherent description of a plan covering all the major steps is provided. The steps are set out in a logical manner that could be followed by another person to obtain valid results.

Level 1 (1–2 marks):

Simple statements relating to relevant apparatus or steps are made but they may not be in a logical order. The plan would not allow another person to obtain valid results.

0 marks:

No relevant content

Indicative content

- ammeter used to measure current
- voltmeter used to measure potential difference
- resistance of variable resistor altered to change current in circuit **or** change potential difference (across filament lamp)
- resistance (of filament lamp) calculated **or** $R = V / I$ statement
- resistance calculated for a large enough range of different currents that would allow a valid conclusion about the relationship to be made

4

- (c) (as current increases) resistance increases (at an increasing rate)

1

- (d) any value between 6.3 and 6.9 (Ω)

1

- (e) **A:** Filament lamp

1

B: Resistor at constant temperature

1

C: Diode

1

[11]