

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

(a) % increase = $\frac{(10\,000 - 3200)}{3200} \times 100$ 1

% increase = 212.5 (%) 1

- (b) Any **two** from:
- no sulfur dioxide released
 - doesn't cause acid rain
 - no particulates released
 - doesn't cause global dimming
 - less carbon dioxide released (per kg of fuel burned)
 - less global warming
 - allow less climate change*
 - allow less greenhouse gases*
 - no solid waste
 - gas mining is less destructive than coal mining
 - ignore less air pollution*
- 2

- (c) mean sea surface temperature shows a (steady) increase 1

over the time period on the graph
conditional on scoring 1st marking point
allow between a correct pair of dates at least 10 years apart

or

from 16.45 (°C) to 16.96 (°C)
allow a correct pair of temperatures at least 10 years apart 1

- (d) thermistor C 1

(because) the change in resistance is greatest
conditional on scoring 1st marking point
allow the gradient is highest
allow more sensitive to temperature change 1

between 0 and 25 °C

conditional on scoring 2nd marking point
 allow between 16 and 17 °C
 if thermistor C is not chosen, allow for 1 mark each:
 not thermistor A because there is no/little change in resistance
 not thermistor B as there is only a small change in resistance
 not thermistor D as there is no data available between 0 and 40 °C

1

[9]

Q2.

(a) $15.7 = \frac{15.8 + 15.3 + X}{3}$

1

$X = 16.0 (\Omega)$

1

(b) precise results show little variation

1

the 4th result was further away from the mean than the other values

allow the range of values has increased

ignore the 4th result was an anomaly

1

(c) two pairs of values of n and R showing that $n \times R = \text{constant}$

e.g. $2 \times 24 = 48$, $3 \times 16 = 48$

$4 \times 12 = 48$, $5 \times 9.5 = 47.5$

$6 \times 8 = 48$

1

third pair of values of n and R showing that $n \times R = \text{constant}$

1

(so) $n \times R = \text{constant}$ (showing the student was correct)

allow 1 mark each for two statements relating the change in number of resistors to the change in (mean total) resistance

allow 1 mark for use of data from graph to confirm at least one statement

1

(d) multiple paths for charge / electrons to flow

allow current for charge

1

total current is greater (for the same potential difference when more resistors are added)

1

[9]