

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Mark Schemes

Q1.

- (a) (i) temperature (increase) and time switched on are directly proportional
accept the idea of equal increases in time giving equal increases in temperature

answers such as:

- *as time increases, temperature increases*
- *positive correlation*
- *linear relationship*
- *temperature and time are proportional*

score 1 mark

2

- (ii) any **one** from:

"it" refers to the metal block

- *energy transfer (from the block) to the surroundings*
accept lost for transfer
accept air for surroundings
- *(some) energy used to warm the heater / thermometer (itself)*
accept takes time for heater to warm up
- *(metal) block is not insulated*

1

- (iii) 15 000

allow 1 mark for correct substitution, ie 50×300 provided no subsequent step shown

2

- (b) lead

reason only scores if lead is chosen

1

needs least energy to raise temperature by 1°C

accept needs less energy to heat it (by the same amount)
lowest specific heat capacity is insufficient

1

[7]

Q2.

- (a) $25(\Omega)$

1

- (b) (i) 2(V)

allow 1 mark for showing a correct method, ie 6 / 3

2

- (ii) equal to

1

[4]

Q3.

- (a) (i) 50 (Hz)

1

- (ii) 2760 (W)

1

- (b) 12

allow 1 mark for correct substitution, ie 2400/200

or

allow 1 mark for 2760/230 provided no subsequent step shown

2

amps

1

- (c) the charge is directly proportional to the time switched on for
accept for 1 mark the longer time (to boil), the greater amount of charge
or positive correlation
or they are proportional

2

[7]