Practice Question Set For GCSE
**Subject : Physics**
**Paper-1 Topic: Electricity (Standard demand)**

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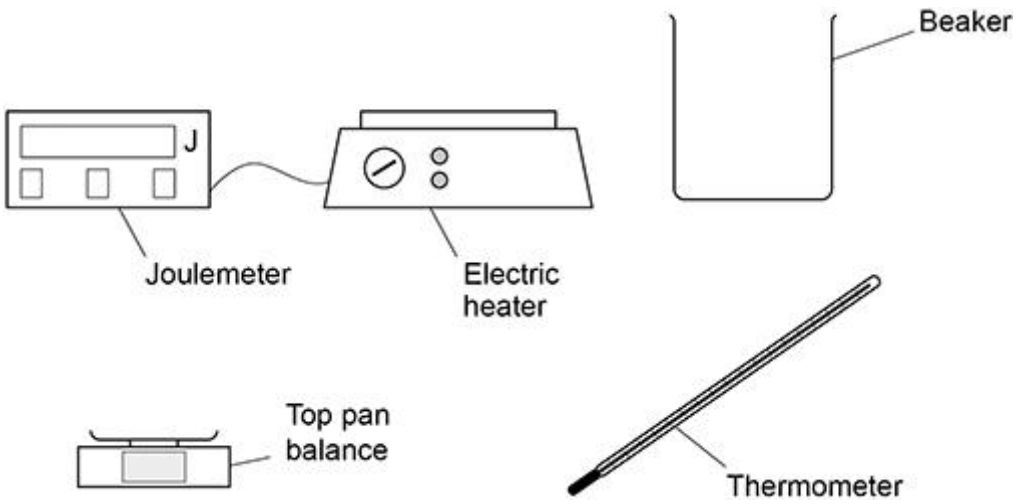
**Name of the Student**:_____
**Max. Marks : 26 Marks** **Time : 26 Minutes**

## Q1.

A student made measurements to determine the specific heat capacity of vegetable oil.

**Figure 1** shows the equipment used.

**Figure 1**




(a) Describe how the student could use the equipment shown in **Figure 1** to determine the specific heat capacity of vegetable oil.

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**(6)**

(b) Give **one** risk when using the equipment in **Figure 1**.

_____

_____

**(1)**

A different student did not have a joulemeter and calculated the energy transferred by the electric heater.

Use the Physics Equations Sheet to answer parts (c) and (d).

(c) Write down the equation linking energy transferred (*E*), power (*P*) and time (*t*).

_____

**(1)**

(d) The electric heater had a power output of 50 watts.

Calculate the time taken for the electric element to transfer 4750 joules of energy to the vegetable oil.

_____

_____

_____

_____

_____

Time taken = _____ s

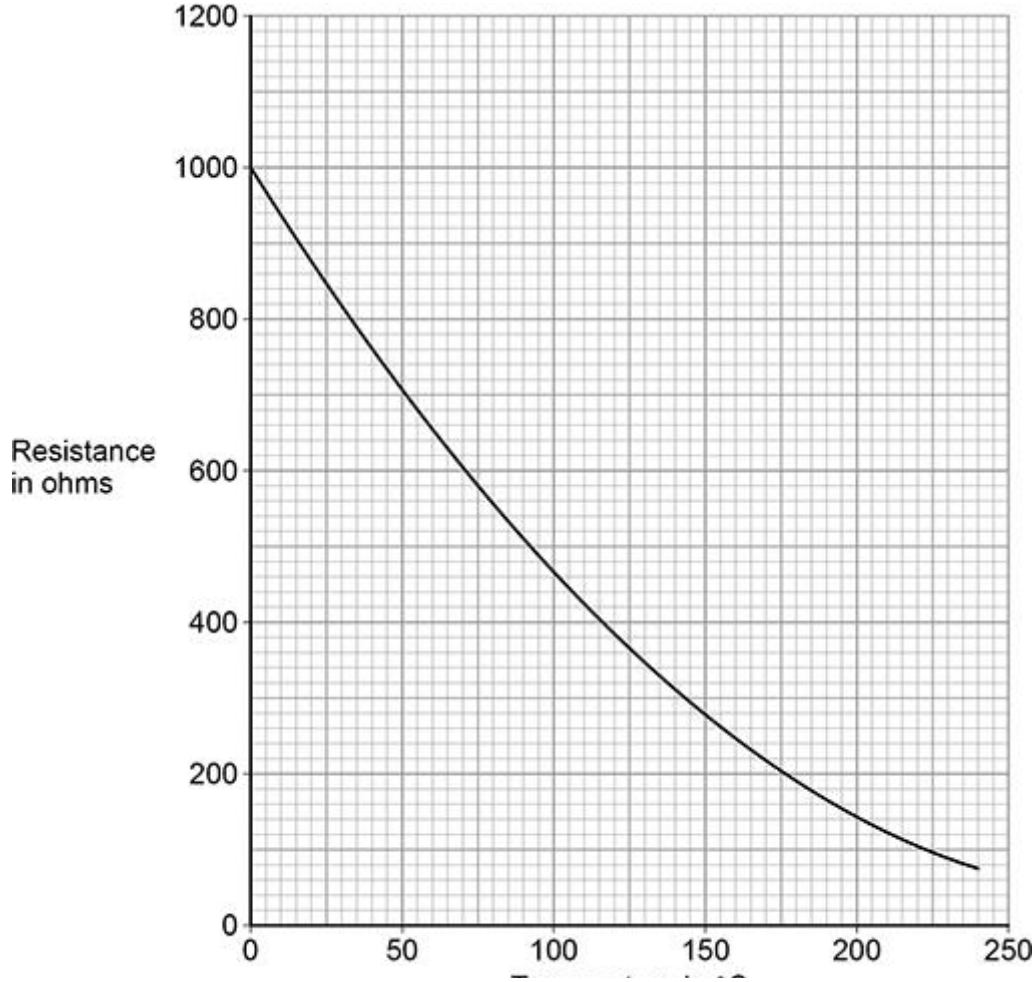
**(3)**

In a deep fryer, vegetable oil is heated by an electric heating element. Food is then cooked in the hot vegetable oil.

The deep fryer contains an electrical component to monitor the temperature of the vegetable oil.

**Figure 2** shows how the resistance of this electrical component changes with temperature.

**Figure 2**




(e) What electrical component is used to monitor the temperature of the vegetable oil?

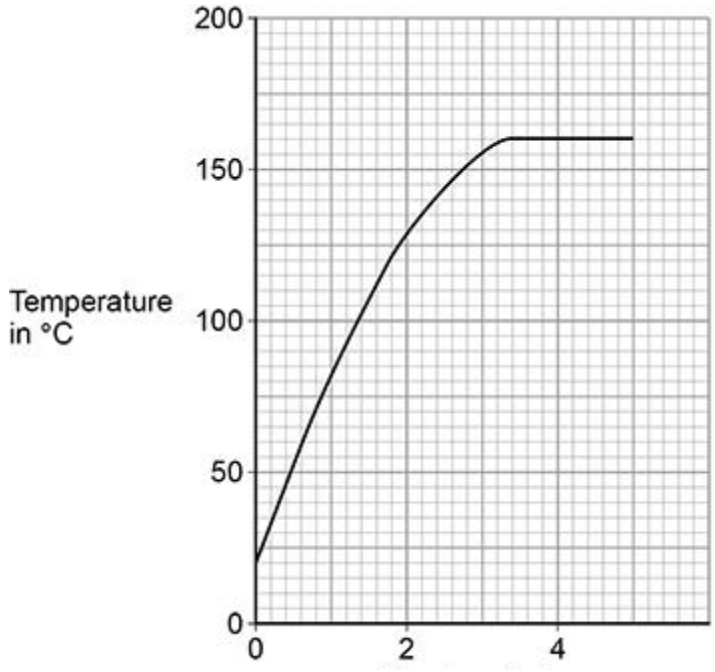
_____

**(1)**

(f) The electric heating element in the deep fryer automatically switches off when the vegetable oil reaches a certain temperature.

**Figure 3** shows how the temperature of the vegetable oil changed after the deep fryer was switched on.

**Figure 3**




Determine the resistance of the electrical component when the electric heating element automatically switched off.

Use **Figure 2** and **Figure 3**.

_____

_____

_____

_____

Resistance = _____ Ω

**(2)**

(g) Some chips were put in the deep fryer.

In the deep fryer, water in the chips underwent a physical change and became steam.

Why is this a physical change?

Tick (✓) **one** box.

| | |
|---|---|
| All water can change to steam. | ☐ |
| No chemicals are involved when water changes to steam. | ☐ |
| The change from water to steam can be detected visually. | ☐ |
| The water will recover its original properties if the steam is cooled. | ☐ |

**(1)**

## Q2.

**Figure 1** shows a mobile phone with its battery removed.

**Figure 1**


A student measured the potential difference across the battery and then put the battery into the phone.

(a) What is the equation linking current (*I*), potential difference (*V*) and resistance (*R*)?

Tick (✓) **one** box.

$I = V R$ ☐

$R = I V$ ☐

$V = I R$ ☐

$V = I_2 R$ ☐

**(1)**

(b) The current in the electronic circuit in the mobile phone was 0.12 A.

The potential difference across the battery was 3.9 V.

Calculate the resistance of the electronic circuit in the mobile phone.

_____

_____

_____

Resistance = _____ Ω

**(3)**

(c) Write down the equation which links energy (*E*), power (*P*) and time (*t*).

**(1)**

(d) The battery was fully charged when it was put into the mobile phone.

The battery discharged when the mobile phone was switched on.

The average power output of the battery as it discharged was 0.46 watts.

The time taken to fully discharge the battery was 2500 minutes.

Calculate the energy transferred by the battery.

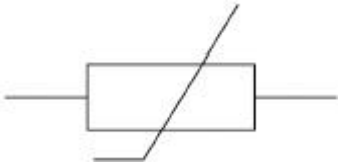
Energy transferred = _____ J

**(3)**

The mobile phone includes a sensor to monitor the temperature of the battery.

**Figure 2** shows the circuit symbol for a component used in the sensor.

**Figure 2**



(e) What component does the circuit symbol shown in **Figure 2** represent?

**(1)**

(f) The temperature of the component in **Figure 2** increases.

The potential difference across the component remains constant.

Explain what happens to the current in the component.

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_____

_____

**(2)**
**(Total 11 marks)**