

Work Sheet - 1

1 The diagram shows some electrical appliances.



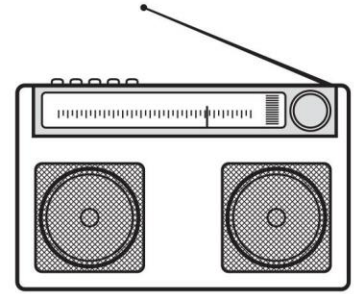
A



B



C



D

(a) (i) Which appliance is designed to transfer electrical energy to thermal energy?

(1)

- A** food mixer
- B** kettle
- C** lamp
- D** radio

(ii) Which appliance is designed to transfer electrical energy to kinetic energy?

(1)

- A** food mixer
- B** kettle
- C** lamp
- D** radio

(b) In all the appliances, energy is conserved.

What is meant by the phrase **energy is conserved**?

(1)

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(c) (i) The lamp has an efficiency of 20%.

Explain what this means.

(2)

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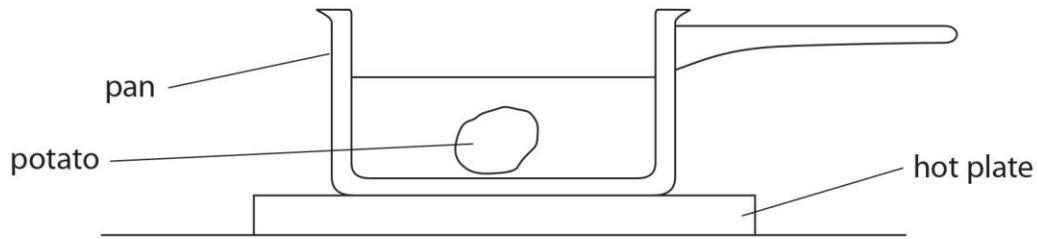
(ii) Draw a labelled Sankey diagram for the lamp.

(3)

Work Sheet - 3

1 This question is about three different methods used to cook potatoes.

(a) On a traditional cooker, a potato is placed in water in a pan on top of a hot plate.



Describe how energy is transferred from the hot plate to heat up all of the potato.

(4)

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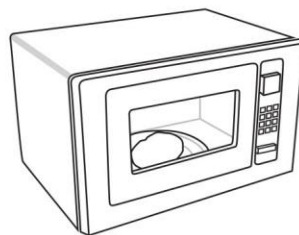
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(b) A microwave cooker is often said to 'cook the food from the inside'.



Explain whether this statement is true by describing how energy is transferred to heat up all of the potato.

(3)

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Work Sheet - 4

Q1.

(a) What is meant by specific heat capacity?

[2 marks]

(b) Quenching is a process used to change the properties of steel by rapidly cooling it.

During the quenching process, the steel is heated to a very high temperature and then placed in a container of cold water.

A steel rod is quenched by heating it to a temperature of 815 °C before placing it in cold water.

The mass of the steel rod is 15 kg.

The final temperature of the rod and water is 60 °C.

Calculate the energy transferred from the steel rod to the water.

Use the correct equation from the Physics Equation Sheet.

Specific heat capacity of steel = 490 J/kg °C.

Give the answer to two significant figures.

[3 marks]

Energy transferred = _____ J

Work Sheet - 5

Q1.

A cyclist is riding along a straight, level road at a constant speed.

(a) Complete the sentences.

[2 marks]

As the cyclist rides along the road, the _____ energy store in the cyclist's body decreases.

The speed of the cyclist is constant when the work done by the cyclist is _____ the work done against air resistance.

(b) Write down the equation that equates power (P), time (t) and work done (W).

[1 mark]

(c) Calculate the work done by the cyclist when his power output is 350 W for 1500 seconds.

[3 marks]

Work done = _____ J

[Question total: 6 marks]

Work Sheet - 6

Q1.

A teacher set the pupils in his class the task of determining the pressure they exert on the floor when they stand on one foot.

- (a) Explain how the students can determine this pressure, describing any measurements that they will need to make.

[4 marks]

- (b) One of the students has a weight of 600 N.

After carrying out the experiment he sits on a chair with a weight of 100 N and leans back so that it is balanced on its back two legs.

Each leg has an area of 1 cm^2 in contact with the floor.

Calculate the pressure exerted beneath each of the back two legs.

[3 marks]

Pressure = _____ N/cm^2

[Question total: 7 marks]