Thermal Processes – 2019 June

1. 0625/33/M/J/19/No.6

Fig. 6.1 shows a metal pan containing water being heated by an electrical heater.

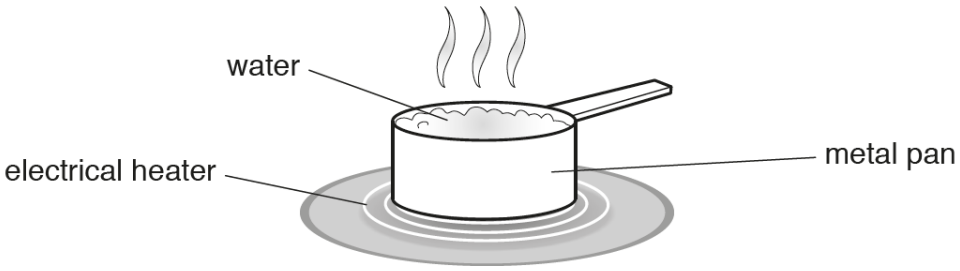

Fig. 6.1

(a) Complete the sentences to describe how thermal energy is transferred.

(i) Thermal energy is transferred from the electrical heater to the bottom of the pan by ..... [1]

(ii) Thermal energy is transferred through the bottom of the metal pan by ..... [1]

(iii) Thermal energy is transferred throughout the water by ..... [1]

(b) A student carries out an experiment to determine which surface is the better emitter of thermal energy. She uses two similar metal containers. One of the containers has a dull black surface. The other has a shiny white surface. Fig. 6.2 shows the metal containers on a bench.

(i) Suggest a procedure for her experiment. You may add to Fig. 6.2 to assist with your explanation.

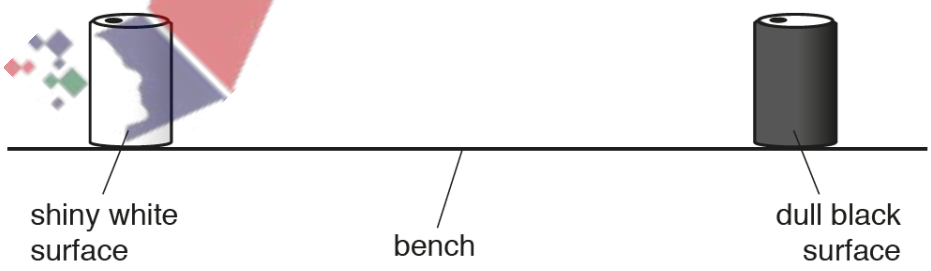

Fig. 6.2

.....

.....

.....

..... [3]

(ii) Predict the result of the experiment described in **(b)(i)**.

.....

..... [1]

[Total: 7]

2. 0625/43/M/J/19/No.5

Fig. 5.1 shows a cross-section of the inside of a vacuum flask containing a cold liquid. The walls of the vacuum flask are made of glass.

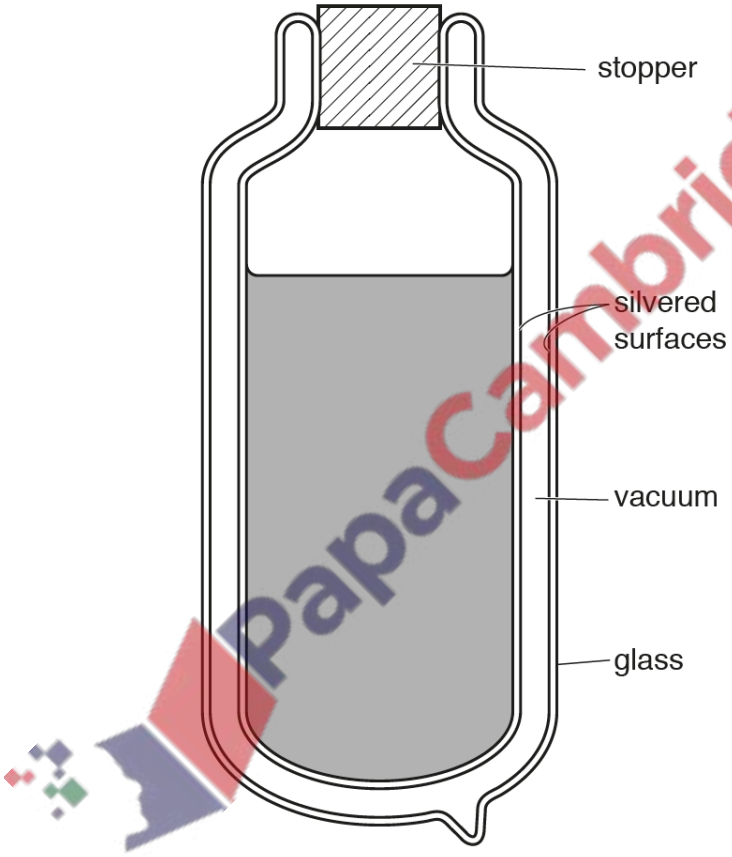

Fig. 5.1

(a) The vacuum flask is being used to keep a liquid cool on a hot day.

Explain how the labelled features of the vacuum flask keep the liquid cool by reducing thermal energy transfer. Include the names of the processes involved.

.....

.....

.....

.....

.....

.....

..... [5]

(b) Suggest a suitable material for the stopper.

..... [1]

[Total: 6]

(a) Fig. 6.1 shows a cross-section of the inside of an electric oven.

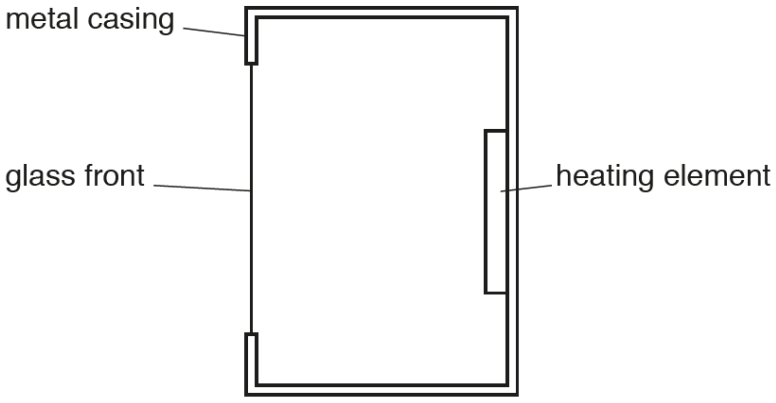

Fig. 6.1

The heater is switched on.

(i) On Fig. 6.1, draw two arrows to show how thermal energy moves throughout the oven by convection. [2]

(ii) Explain how thermal energy moves throughout the oven by convection. Use your ideas about density and expansion.

.....

.....

.....

..... [3]

(iii) Use a word from the box to complete the sentence.

conduction	expansion	insulation	radiation

Thermal energy travels at the speed of light by ..... [1]

(b) The oven is in a kitchen that is fitted with a smoke detector.

Warm, moving air can carry smoke particles.

Suggest the best position for the smoke detector in the kitchen.

..... [1]

[Total: 7]