Thermal Processes – 2022 November IGCSE 0625

1. Nov/2022/Paper_11/No.16

Four thermometers, with their bulbs painted different colours, are placed at equal distances from a radiant heater.

Which thermometer shows the slowest temperature rise when the heater is first switched on?

A dull black

B dull white

C shiny black

D shiny white

2. Nov/2022/Paper_11/No.17

Which method of transfer of thermal energy is caused by changes in density?

A conduction

B convection

C evaporation

D radiation

3. Nov/2022/Paper_12/No.16

Which piece of equipment is designed to produce a type of electromagnetic wave?

A electric fire

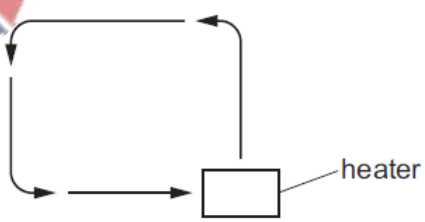
B electric generator

C electric motor

D electromagnet

4. Nov/2022/Paper_12/No.17

Particles can move, transferring thermal energy, as shown.



In which states of matter does this movement occur?

A gas and liquid only

B gas and solid only

C gas, liquid and solid

D liquid and solid only

5. Nov/2022/Paper_13/No.17

How is energy transferred from the Sun to the Earth?

A by α-particles

B by conduction

C by convection

D by radiation

6. Nov/2022/Paper_21/No.16

Four thermometers, with their bulbs painted different colours, are placed at equal distances from a radiant heater.

Which thermometer shows the slowest temperature rise when the heater is first switched on?

A dull black

B dull white

C shiny black

D shiny white

7. Nov/2022/Paper_22/No.16

Which piece of equipment is designed to produce a type of electromagnetic wave?

A electric fire

B electric generator

C electric motor

D electromagnet

8. Nov/2022/Paper_23/No.16

Which piece of equipment is designed to produce a type of electromagnetic wave?

A electric fire

B electric generator

C electric motor

D electromagnet

9. Nov/2022/Paper_32/No.4(b)

(b) A student designs a container to keep a hot liquid at a high temperature.
The container is shown in Fig. 4.2.

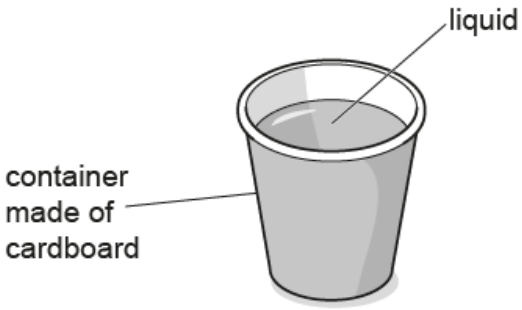


Fig. 4.2

He finds that the liquid cools too quickly.

Suggest **two** improvements to the design of the container which reduce the transfer of thermal energy from the hot liquid to its surroundings.
For each suggestion, state the thermal transfer process that it reduces.

suggestion 1 .....

.....

thermal transfer process .....

suggestion 2 .....

.....

thermal transfer process .....

[4]

10. Nov/2022/Paper_41/No.5

Fig. 5.1 shows a heater in a bathroom.

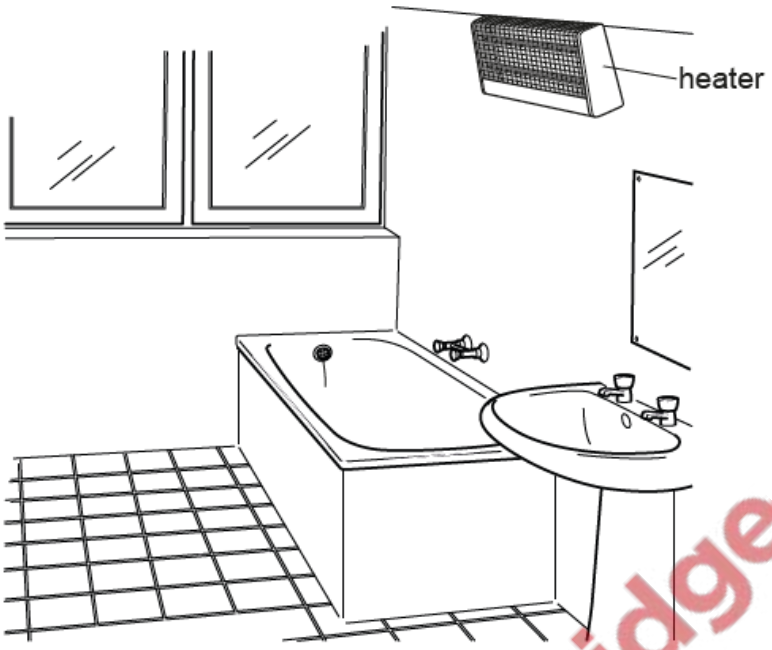


Fig. 5.1

The heater is at a very high temperature and it glows red. The manufacturer states:

> "The heater emits light and radiation and it transfers thermal energy by radiation."

(a) State the part of the electromagnetic spectrum that transfers thermal energy.

..... [1]

(b) State:

(i) **one** way in which visible light and the radiation identified in **(a)** are similar

.....

..... [1]

(ii) **one** way in which visible light differs from the radiation identified in **(a)**.

.....

..... [1]

(c) Some surfaces are better at emitting radiation than others.

(i) Describe an experiment to show whether a black surface or a white surface is the better emitter of radiation. You may draw a diagram.

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.....

..... [3]

(ii) To ensure that the conclusion reached in the experiment in **(c)(i)** is correct, several details of the experiment must be identical when testing the two different surfaces.

State **two** quantities in the experiment that you described that must be identical during the test.

1. .....

.....

2. .....

.....

[2]

[Total: 8]

11. Nov/2022/Paper_42/No.5(b_ c)

(b) Fig. 5.1 shows a factory worker standing 3 m from the block.

State and explain the main process by which thermal energy is transferred to the worker.

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..... [3]

(c) State and explain the main process by which thermal energy is transferred from the outer surface of the solid metal rollers to their interior.

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..... [3]