

Thermal Processes

Question Paper 2

Level	IGCSE
Subject	Physics (0625/0972)
Exam Board	Cambridge International Examinations (CIE)
Topic	General Physics
Sub-Topic	Thermal Processes
Booklet	Question Paper 2

Time allowed: 23 minutes

Score: /18

Percentage: /100

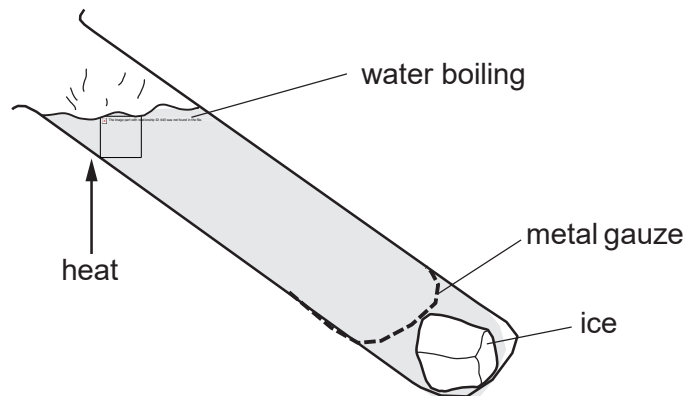
Grade Boundaries:

9	8	7	6	5	4	3	2	1
>85%	75%	68%	60%	55%	50%	43%	35%	<30%

Question 1

Ice is trapped by a metal gauze at the bottom of a tube containing water.

The water is heated strongly at the top, but the ice only melts very slowly.



Why does the ice melt so slowly?

- A. Heat energy always travels upwards.
- B. Hot water is more dense than cold water.
- C. Metal gauze does not allow heat to pass through.
- D. Water is a poor conductor of heat.

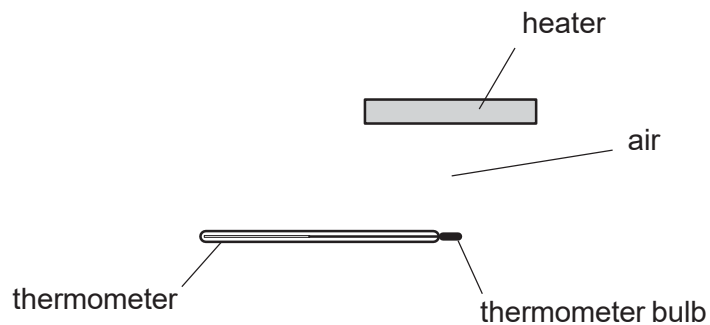
Question 2

Which statement about the transfer of thermal energy is correct?

- A. All metals conduct thermal energy equally well.
- B. Convection can only occur in solids or liquids.
- C. Convection occurs in liquids because hot liquid is more dense than cold liquid.
- D. The radiation that transfers thermal energy is a type of electromagnetic radiation.

Question 3

The diagram shows a heater above a thermometer. The thermometer bulb is in the position shown.

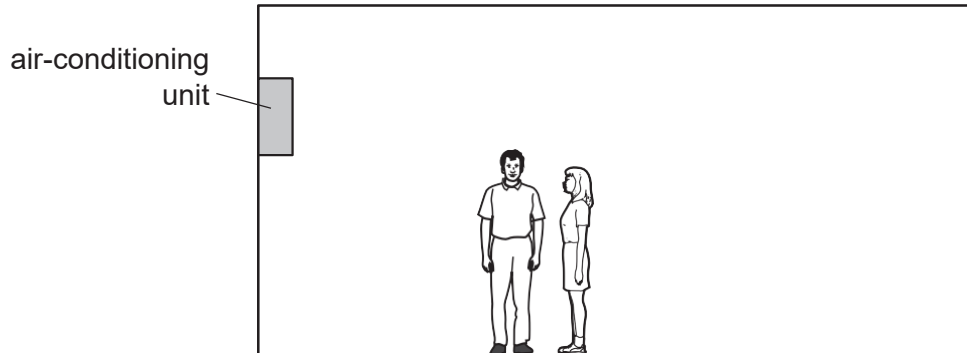


Which row shows how the heat energy from the heater reaches the thermometer bulb?

	conduction	convection	radiation
A	yes	yes	no
B	yes	no	yes
C	no	yes	no
D	no	no	yes

Question 4

The diagram shows an air-conditioning unit on the wall of a room. The unit draws in warm air from the room and releases cold air into the room.



What happens to the cold air and why?

	cold air	why?
A	falls	it is less dense than warm air
B	falls	it is more dense than warm air
C	rises	it is less dense than warm air
D	rises	it is more dense than warm air

Question 5

Which statement about thermal radiation is correct?

- A. It can only occur in a vacuum.
- B. It involves movement of electrons through a material.
- C. It involves movement of atoms.
- D. It is infra-red radiation.

Question 6

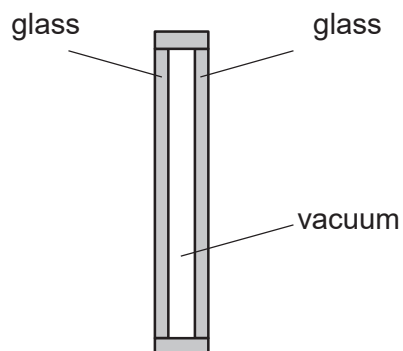
The metal surface of a kettle is hot.

What happens to the cool air outside the kettle when it comes into contact with the hot kettle?

- A The density of the air decreases and the air falls.
- B The density of the air decreases and the air rises.
- C The density of the air increases and the air falls.
- D The density of the air increases and the air rises.

Question 7

One type of double glazing consists of two panes of glass separated by a vacuum.



Which method or methods of energy transfer are prevented by the vacuum?

- A conduction and convection
- B conduction and radiation
- C convection and radiation
- D radiation only.

Question 8

Two methods by which thermal energy can be transferred are conduction and radiation.

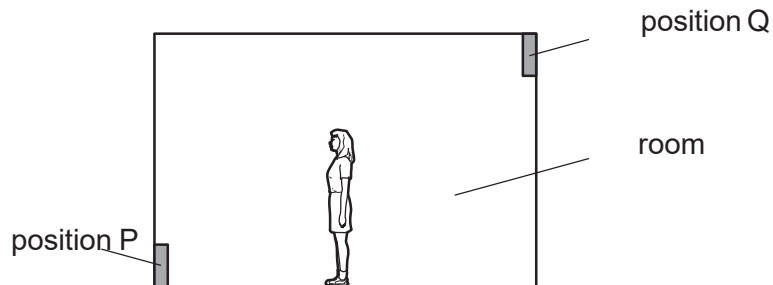
Which statement is correct?

- A. Conduction involves density changes in fluids.
- B. Conduction only occurs in solids.
- C. Radiation cannot occur in a vacuum.
- D. Radiation involves electromagnetic waves.

Question 9

A heater is to be fitted in a room to warm the air throughout the room.

The diagram shows two possible positions to fit the heater, P and Q.

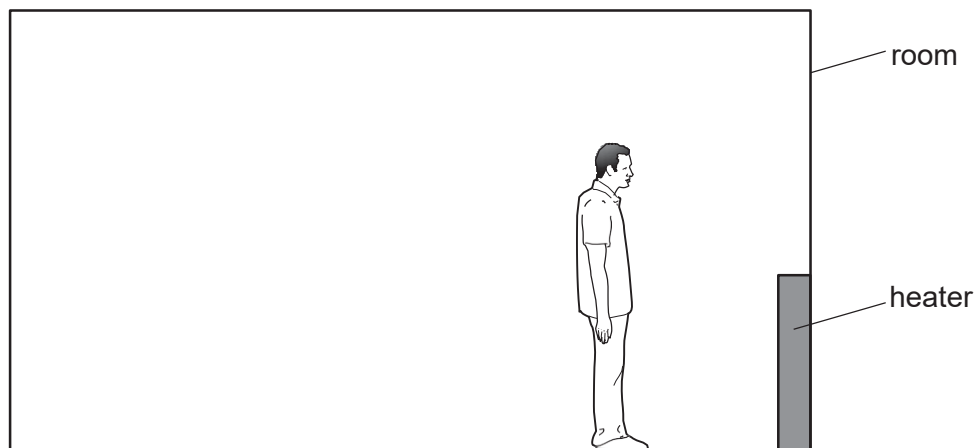


Which position is better and why?

	position	why?
A	P	warmer air is less dense and rises
B	P	warmer air is more dense and rises
C	Q	warmer air is less dense and falls
D	Q	warmer air is more dense and falls

Question 10

A man goes into a cold room and switches on a heater. The man then stands one metre away from the heater. He feels warmer almost immediately.



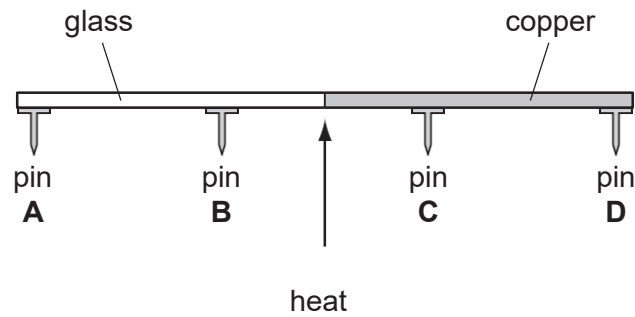
How is thermal energy transferred from the heater to the man so quickly?

- A. by conduction, convection and radiation
- B. by conduction only
- C. by convection only
- D. by radiation only

Question 11

A rod is made half of glass and half of copper. Four pins, A, B, C and D are attached to the rod by wax. The rod is heated in the centre as shown.

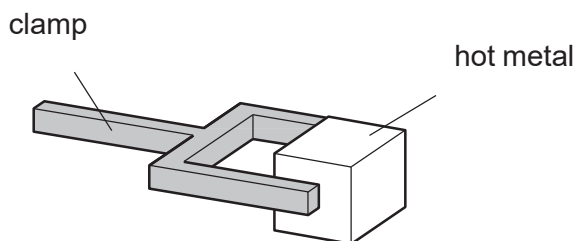
Which pin falls off first?



Question 12

A piece of hot metal is held by a clamp in a cold room. The air next to the metal becomes hot.

The density of the air changes and the air moves.



Which row shows the density change of the air and the direction in which the air moves?

	density of air	movement of air
A	decreases	downwards
B	decreases	upwards
C	increases	downwards
D	increases	upwards

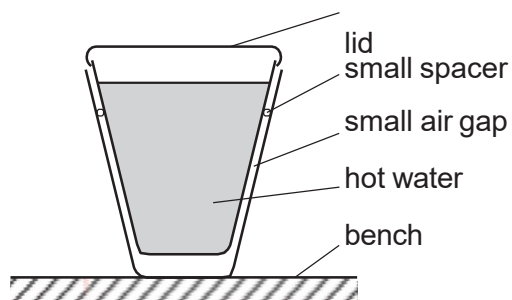
Question 13

Why does convection take place in a liquid when it is heated?

- A. Liquids expand when they are heated.
- B. Liquids start to bubble when they get close to boiling point.
- C. Molecules in the liquid expand when they are heated.
- D. Molecules near to the surface of the liquid escape into the air.

Question 14

Two plastic cups are placed one inside the other. Hot water is poured into the inner cup and a lid is put on top, as shown.



Which statement is correct?

- A. Heat loss by radiation is prevented by the small air gap.
- B. No heat passes through the sides of either cup.
- C. The bench is heated by convection from the bottom of the outer cup.
- D. The lid is used to reduce heat loss by convection.

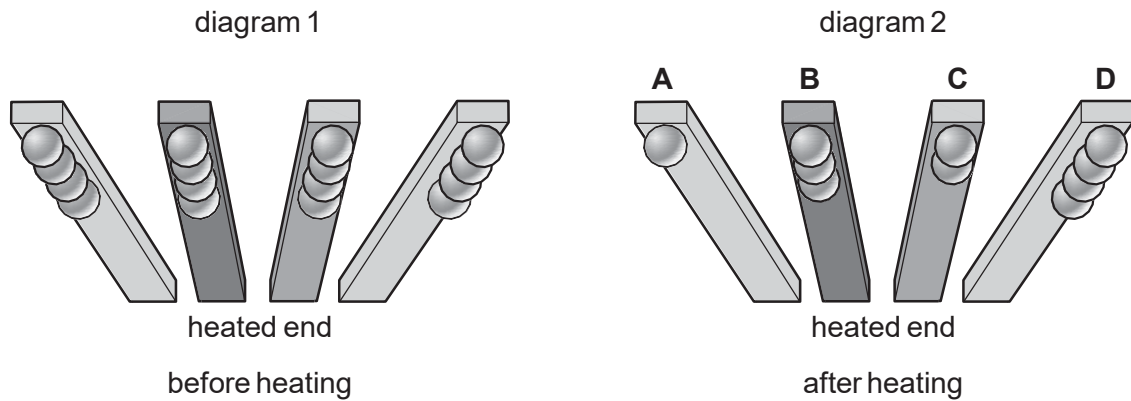
Question 15

An experiment is set up to find out which metal is the best conductor of heat.

Balls are stuck with wax to rods made from different metals, as shown in diagram 1.

The rods are heated at one end. Some of the balls fall off, leaving some as shown in diagram 2.

Which labelled metal is the best conductor of heat?



Question 16

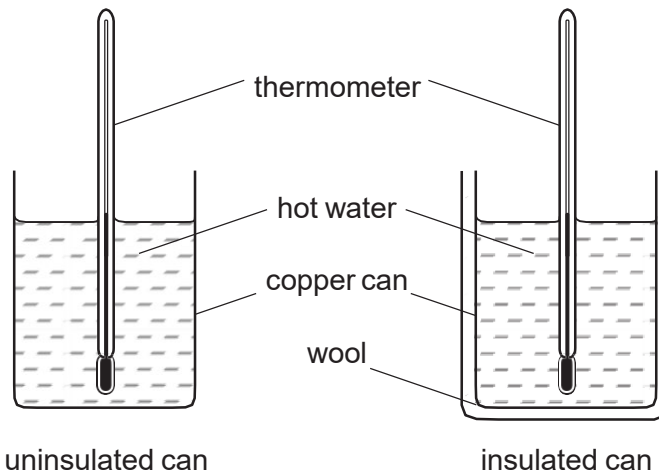
Food is kept in a cool-box which uses two ice packs to keep it cool.

Where should the ice packs be placed to keep all the food as cool as possible?

- A. both at the bottom of the box
- B. both at the top of the box
- C. one at the front and one at the back of the box
- D. one on the left and one on the right of the box

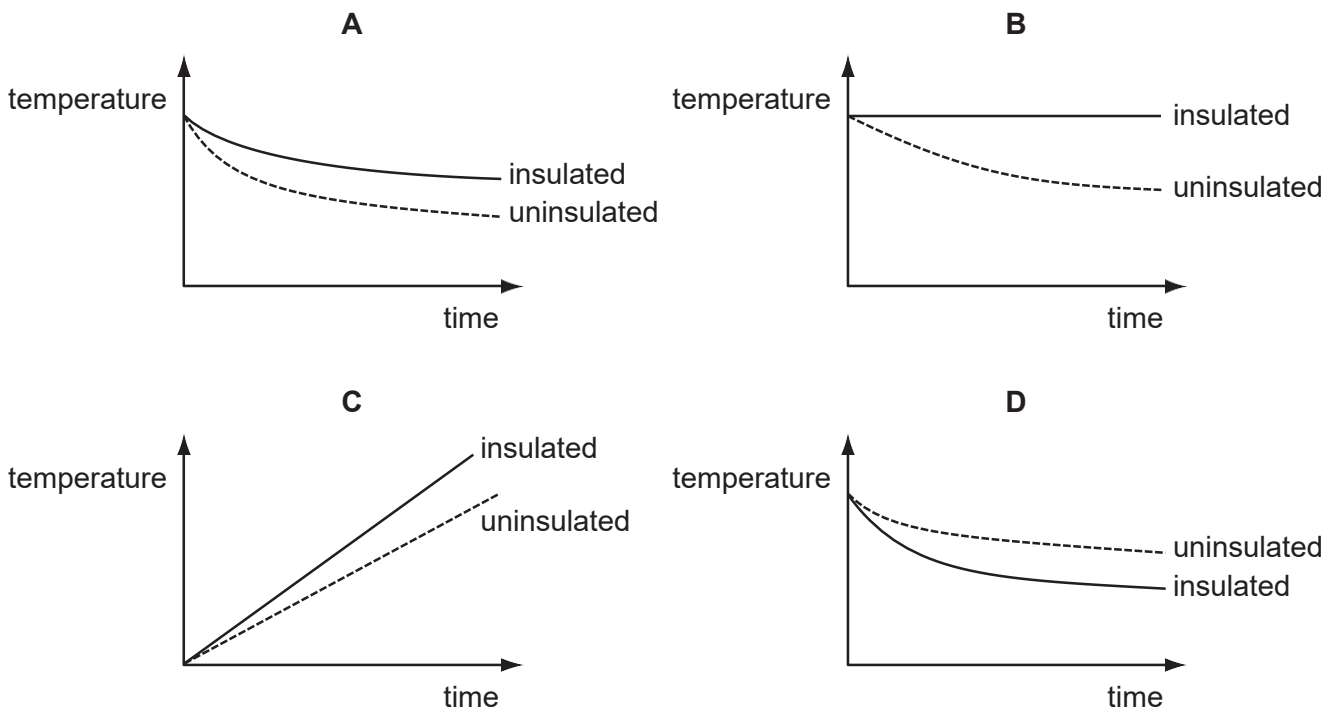
Question 17

Two identical copper cans are filled with boiling water.



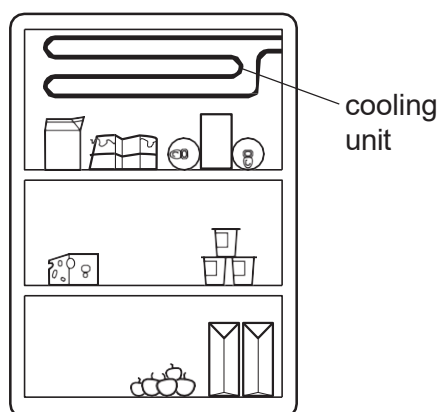
One can is insulated with wool. The temperature of the water in each can is taken every minute for several minutes. Graphs of the results are plotted.

Which graph shows the results obtained?



Question 18

The diagram shows a cooling unit in a refrigerator.



Why is the cooling unit placed at the top?

- A. Cold air falls and warm air is displaced upwards.
- B. Cold air is a bad conductor so heat is not conducted into the refrigerator.
- C. Cold air is a good conductor so heat is conducted out of the refrigerator.
- D. Cold air remains at the top and so prevents convection.