

Transfer of Thermal Energy

Question Paper

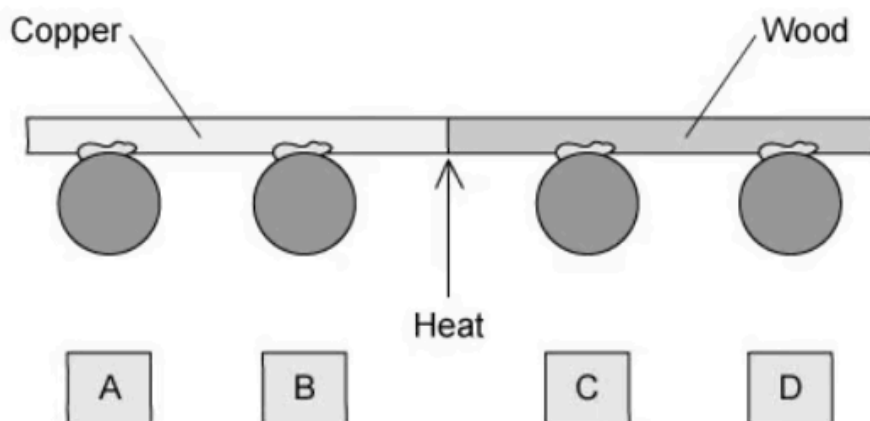
Course	CIE IGCSE Physics
Section	2. Thermal Physics
Topic	Transfer of Thermal Energy
Difficulty	Medium

Time Allowed	10
Score	/5
Percentage	/100

Question 1

In a very common classroom Physics demonstration, a teacher sets up a rod, as shown in the diagram. Half of the rod is copper, the other half is wood.

She sticks four lead balls to the rod using wax. The wax melts when its temperature rises a small amount, causing the ball to fall off.



The teacher heats the rod in the centre, with something more gentle than a Bunsen burner, that will not burn the wood.

Which ball falls off first?

[1 mark]

Question 2

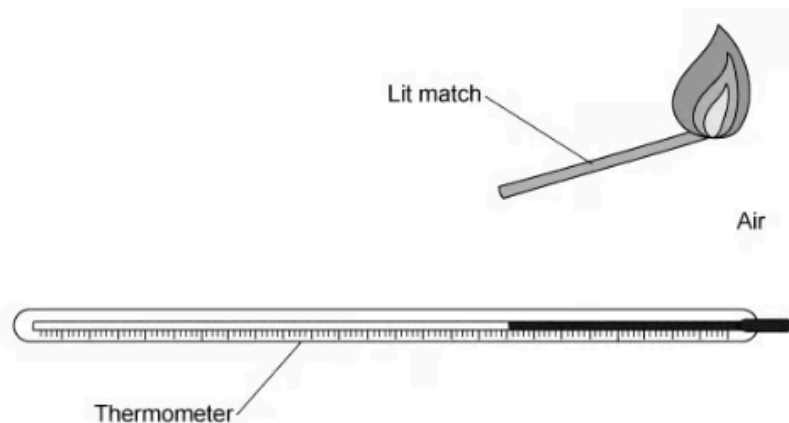
Which of the following statements about energy transfer is correct?

- A. Metals conduct thermal energy well because their electrons are not free to move.
- B. Infrared radiation cannot travel through a vacuum.
- C. Warm fluids rise because their particles move further apart.
- D. Convection only occurs in gases.

[1 mark]

Question 3

A lit match is placed above a thermometer.



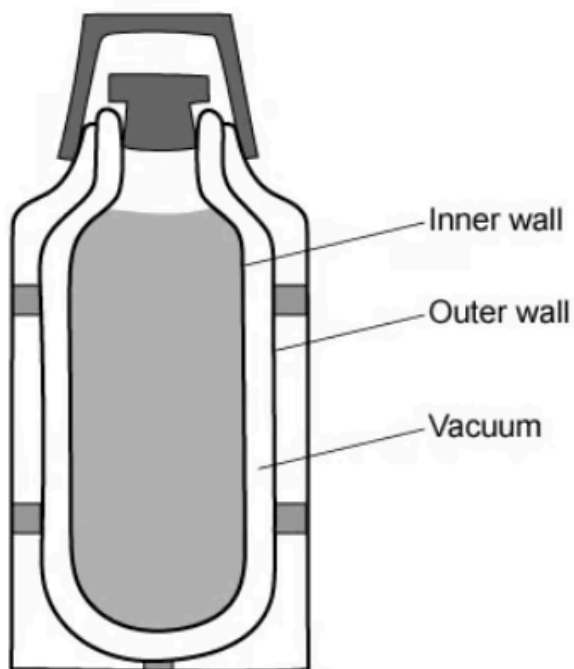
Which row in the table shows how the thermal energy from the lit match reaches the thermometer?

	Convection	Conduction	Radiation
A	yes	yes	yes
B	yes	yes	no
C	no	yes	yes
D	no	no	yes

[1 mark]

Question 4

The walls of a vacuum flask contain two layers of glass, separated by a vacuum.



Which method(s) of thermal energy transfer are prevented by the vacuum?

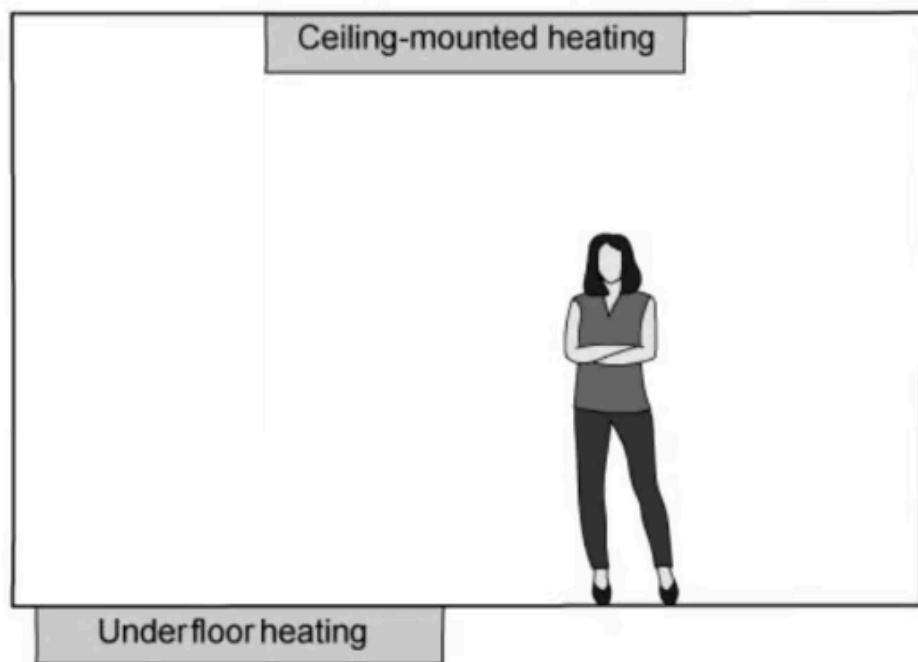
- A. Radiation
- B. Conduction and radiation
- C. Convection and radiation
- D. Conduction and convection

[1 mark]

Question 5

In modern housing, it is convenient to locate heaters so they are not on the walls, taking up valuable wall space for furniture.

Other than wall-mounted radiators, two other options would be viable: ceiling heaters or underfloor heaters.



Which of the two options would heat the room more effectively and why?

	Option	Explanation
A	ceiling-mounted	hot air is more dense and falls
B	ceiling-mounted	hot air is less dense and falls
C	underfloor	hot air is less dense and rises
D	underfloor	hot air is more dense and rises

[1 mark]