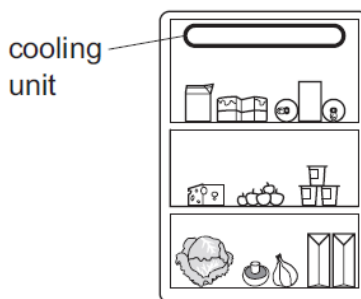


**Transfer of Thermal Energy – 2021 O Level 5054****1. Nov/2021/Paper\_11/No.12**

The diagram shows the inside of a refrigerator.



When the refrigerator is first switched on, what happens to the air near the cooling unit?

	the molecules of this air	the density of this air
<b>A</b>	become smaller	decreases
<b>B</b>	become smaller	increases
<b>C</b>	move closer together	decreases
<b>D</b>	move closer together	increases

**2. Nov/2021/Paper\_12/No.15**

What is the colour and what is the texture of a good absorber of infrared radiation?

- A** black and shiny
- B** black and dull
- C** white and shiny
- D** white and dull

**3. June/2021/Paper\_11/No.15**

A copper rod is heated at one end.

Which statement describes how heat transfer occurs in the copper?

- A** Energetic copper molecules move from the cooler end to the hotter end.
- B** Energetic copper molecules move from the hotter end to the cooler end.
- C** Energetic free electrons move from the cooler end to the hotter end.
- D** Energetic free electrons move from the hotter end to the cooler end.

4. June/2021/Paper\_12/No.18

Which heat transfer processes do **not** require a medium?

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

5. June/2021/Paper\_21/No.2

Fig. 2.1 shows a hollow metal cube filled with boiling water. The temperature of the four vertical surfaces are equal but each surface has a different colour or texture.

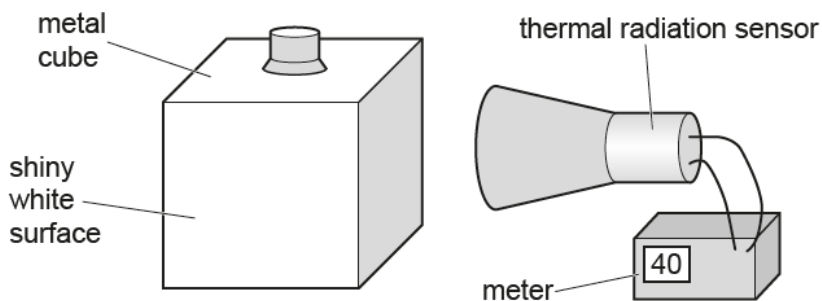


Fig. 2.1

A thermal radiation sensor is placed the same distance from each surface and the meter reading measures the thermal radiation emitted from each surface.

(a) The results are shown in Fig. 2.2.

Draw a line linking each type of surface with the appropriate meter reading. One line has been drawn for you.

type of surface	meter reading
dull black	40
dull white	60
shiny black	80
shiny white	100

A horizontal line is drawn connecting the 'shiny black' surface to the '80' meter reading.

Fig. 2.2

[2]

(b) The hot surfaces produce a convection current in the air outside the metal cube.

Describe how the convection current is produced.

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[3]