

# Rosary School – Marj El Hammam

## Physics 4XPH1

### Unit 4 – Energy Resources and Energy Transfers

#### Chapter 15 – Thermal Energy

#### Past Paper Questions – Worksheet



No. of Questions: 4

No. of Pages: 9

Total Mark : [ / 25 ]

Name: \_\_\_\_\_

Date: \_\_\_\_ / \_\_\_\_ / 2025

Grade: \_\_\_\_\_ ( A / B / C / D )

Subject : IGCSE Physics

#### Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided  
– *there may be more space than you need.*
- Show all the steps in any calculations and state the units.
- Some questions must be answered with a cross in a box . If you change your mind about an answer, put a line through the box  and then mark your new answer with a cross .

#### Information

- The total mark for this paper is **25**
- The marks for **each** question are shown in brackets  
– *use this as a guide as to how much time to spend on each question.*

#### Advice

- Read each question carefully before you start to answer it.
- Write your answers neatly and in good English.
- Try to answer every question.
- Check your answers if you have time at the end.

*Turn over* ►

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4 Photograph 1 shows an outdoor swimming pool.



**Photograph 1**

(a) The water in the swimming pool is heated by the Sun during the day.

(i) State how energy is transferred from the Sun to the water.

(1)

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(ii) State what happens to the average speed of the water molecules as the water is heated.

(1)

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(b) The water in the swimming pool cools down at night.

(i) Suggest why the water cools down at night.

(1)

(ii) Photograph 2 shows the swimming pool with a plastic cover over the water.



**Photograph 2**

Explain why the plastic cover reduces how much the water cools down at night.

(4)

**(Total for Question 4 = 7 marks)**



6 A teacher makes a hot drink.

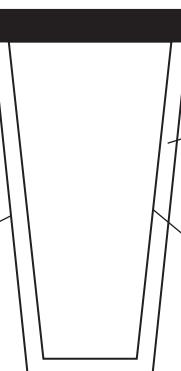
He puts the drink in a cup designed to keep the drink hot.

The photograph and cross-section diagram both show the cup.



plastic lid

shiny metal  
outer surface



vacuum

shiny metal  
inner surface



Explain how the design of the cup keeps the drink hot.

Refer to methods of energy transfer in your answer.

(6)

**(Total for Question 6 = 6 marks)**



7 The photographs show two different breeds of cat.



© Kucher Serhii/Shutterstock

**Cat X**

Cat X has no fur and light-coloured skin.



© Eric Isselee/Shutterstock

**Cat Y**

Cat Y has thick, black fur.

Both cats have the same body temperature and transfer energy to their surroundings when they are outside on a cold day.

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA



Compare how cat X and cat Y transfer energy to their surroundings.

Refer to conduction, convection and radiation in your answer.

(6)

**(Total for Question 7 = 6 marks)**



**10** The photograph shows a large hurdle on an athletics track.

bar



© Sony Ho/Shutterstock

(a) The bar of the hurdle is made of wood and is painted black and white.

The temperature of the hurdle increases when the Sun shines on it.

Explain which part of the bar reaches the highest temperature.

(2)



(b) The air near the bar receives energy by heating.

Explain how a convection current is formed in the air near the bar.

(4)

**(Total for Question 10 = 6 marks)**

