Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Energy (Standard Demand)

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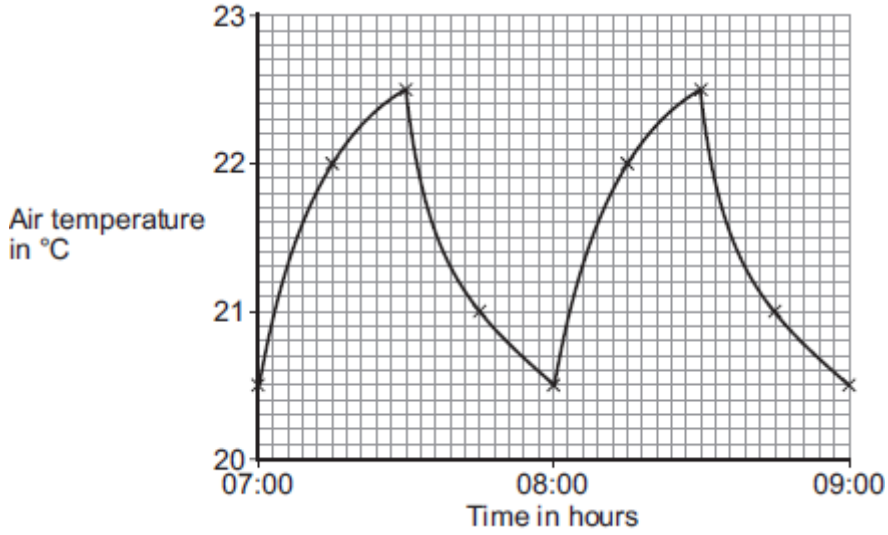
Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

A householder monitored how the air temperature inside his house changed over a 2-hour period. The householder measured the temperature every 15 minutes.

THe graph shows how the temperature changed with time.



(a) (i) The householder used a digital thermometer to measure the temperature.

What would be an appropriate resolution for the digital thermometer?

Draw a ring around your answer.

0.5 °C **1 °C** **5 °C**

(1)

(ii) The householder's results are shown on the graph above.

Why would it **not** be appropriate to use the results to plot a bar chart?

_____

_____

(1)

(b) The householder's heating is controlled by a thermostat. The thermostat switches the heating on when the temperature decreases below a certain temperature.

(i) At what temperature does the thermostat switch the heating on?

_____ °C

(1)

(ii) Use the graph to determine the number of minutes that the householder's heating was switched on between 07:00 and 09:00.

_____

_____

Time = _____ minutes

(1)

(c) The householder read the following extract from a newspaper article about reducing energy use in the home.

> . . . decreasing the temperature setting on your thermostat by 1 °C will reduce your heating bill by 10% . . .

On Monday, the householder set his thermostat at 20.0 °C and recorded the energy, in kWh, used to heat his house.

On Tuesday, the householder set his thermostat at 19.0 °C and recorded the energy, in kWh, used to heat his house.

The table shows the results of the householder's investigation.

Thermostat setting in °C	Energy in kWh
20.0	8.0
19.0	7.2

(i) The outside temperature was the same on both days.

Give **one** reason why this was important.

_____

_____

(1)

(ii) Explain how the results shown in the table above support the extract from the newspaper article.

Justify your answer with a calculation.

_____

_____

_____

_____

(2)

(iii) The statement in the extract is **not** valid for all situations.
Suggest why.

_____

_____

_____

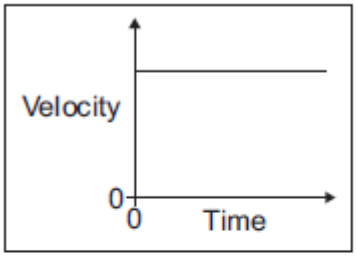
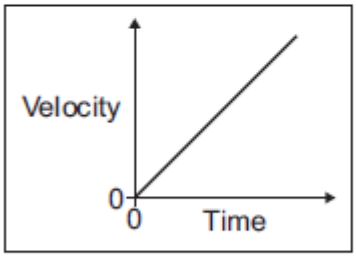
_____

(2)

(Total 9 marks)

Q2.

(a) Draw **one** line from each velocity−time graph to the statement describing the motion shown by the graph.

Velocity–time graph	Motion shown by graph
	Constant acceleration
	Not moving
	Constant deceleration
	Constant velocity

(2)

(b) Use the correct answer from the box to complete the sentence.

energy	**momentum**	**speed**

The velocity of an object includes both the _____ of the object and the direction the object is moving.

(1)

(c) At the start of a race, a horse accelerates from a velocity of 0 m/s to a velocity of 9 m/s in 4 seconds.

(i) Calculate the acceleration of the horse.

_____

_____

Acceleration = _____ m/s^2

(2)

(ii) When the horse accelerates, what, if anything, happens to the air resistance acting against the horse?

Tick (✓) **one** box.

The air resistance decreases	☐
The air resistance is constant	☐
The air resistance increases	☐

(1)

(d) A horse and a pony walk across a field at the same constant speed.

The horse has 4000 joules of kinetic energy.

The pony is **half** the mass of the horse.

What is the kinetic energy of the pony?

Draw a ring around the correct answer

2000 J **4000 J** **8000 J**

Give a reason for your answer.

_____

_____

(2)

(Total 8 marks)