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

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Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Q1.

A scientist had a balloon which was filled with air.

(a) Which statement describes how air particles move?

Tick (✓) **one** box.

At random speeds in random directions	☐
At random speeds in the same direction	☐
At the same speed in random directions	☐
At the same speed in the same direction	☐

(1)

The temperature of the air was 19 °C

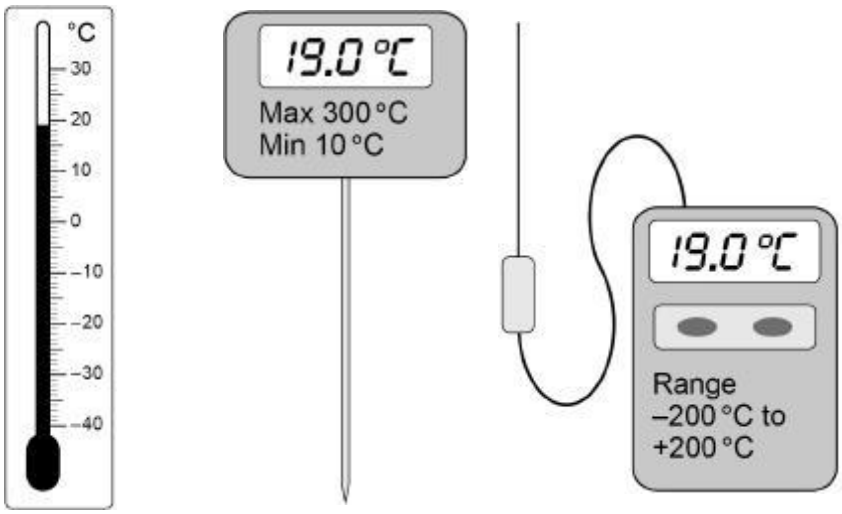
The scientist dipped the balloon into liquid nitrogen.

The temperature of the liquid nitrogen was −196 °C

(b) Which thermometer could be used to measure the temperature of the liquid nitrogen?

Tick (✓) **one** box.

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(1)

(c) The scientist wore special insulating gloves when putting the balloon into the liquid nitrogen.

Suggest why.

_____

_____

(1)

(d) When the balloon was put into liquid nitrogen the temperature of the air in the balloon decreased.

Complete the sentences.

Choose answers from the box.

Each answer may be used once, more than once or not at all.

decreased	**stayed the same**	**increased**

As the air in the balloon cooled down, the speed of the particles

_____. This is because the kinetic energy of the

particles _____.

(2)

(e) The air in the balloon had a mass of 0.00320 kg

The temperature of the air in the balloon decreased by 215 °C

The change in thermal energy of the air in the balloon was 860 J

Calculate the specific heat capacity of the air in the balloon.

Use the Physics Equations Sheet.

_____

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_____

_____

_____

_____

_____

Specific heat capacity = _____ J/kg°C

(3)

(f) The liquid nitrogen boiled.

What happens to the temperature of nitrogen as it boils?

Tick (✓) **one** box.

Temperature decreases	☐
Temperature increases	☐
Temperature stays the same	☐

(1)

The scientist recorded measurements to calculate the specific latent heat of vaporisation of nitrogen.

(g) What is meant by vaporisation?

Tick (✓) **one** box.

A change of state from liquid to gas	☐
A change of state from solid to gas	☐
A change of state from solid to liquid	☐

(1)

(h) The mass of nitrogen that vaporised was 0.0072 kg

1440 J of energy was transferred to the nitrogen as it vaporised.

Calculate the specific latent heat of vaporisation of nitrogen.

Use the Physics Equations Sheet.

_____

_____

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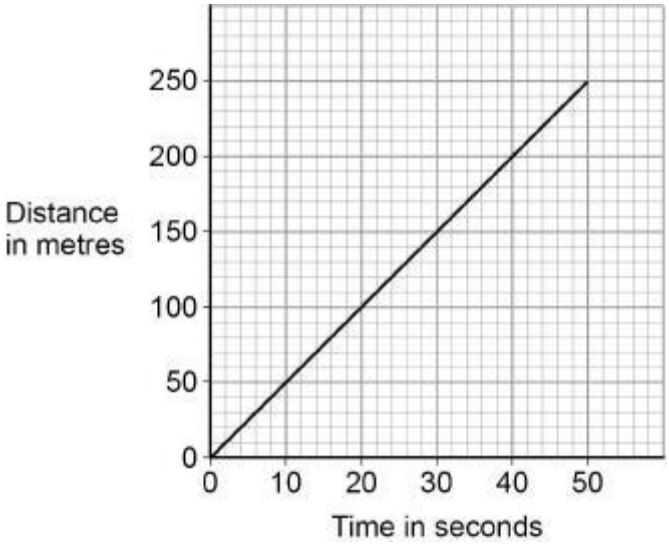
Specific latent heat of vaporisation = _____ J/kg

(3)

(Total 13 marks)

Q2.

The graph below shows a distance-time graph for 50 seconds of a bicycle ride.



(a) The gradient of the distance-time graph gives the speed of the bicycle.

Determine the speed of the bicycle.

Speed = _____ m/s

(2)

(b) Which force acting on the moving bicycle is a non-contact force?

Tick (✓) **one** box.

Air resistance ☐

Friction ☐

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Gravitational force ☐

Normal contact force ☐

(1)

(c) The bicycle travels a distance of 250 m

The bicycle exerts a constant horizontal force of 30 N on the ground.

Calculate the work done.

Use the equation:

work done = force × distance

Choose the unit from the box.

J	**kg**	**m**

_____

_____

_____

_____

Work done = _____ Unit _____

(3)

(d) The bicycle travels at a constant speed.

Complete the sentences.

Choose answers from the box.

chemical	**frictional**	**kinetic**
magnetic	**tension**	

As the bicycle moves, work is done against _____ forces.

There is no change in the cyclist's _____ store of energy.

There is a decrease in the cyclist's _____ store of energy.

(3)

(Total 9 marks)

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