

Name of the Student: _____

Max. Marks : 18 Marks

Time : 18 Minutes

Q1.

The image below shows air being pumped into a car tyre.



- (a) Complete the sentence.

Air particles in the tyre move quickly in _____ directions.

(1)

- (b) When the tyre is at the correct pressure, pumping more air into the tyre causes the pressure to increase further.

The volume and temperature of the air in the tyre do **not** change.

Explain why the pressure increases as more air is pumped into the tyre.

(2)

- (c) The air pressure in a car tyre changes if the temperature of the air in the tyre increases.

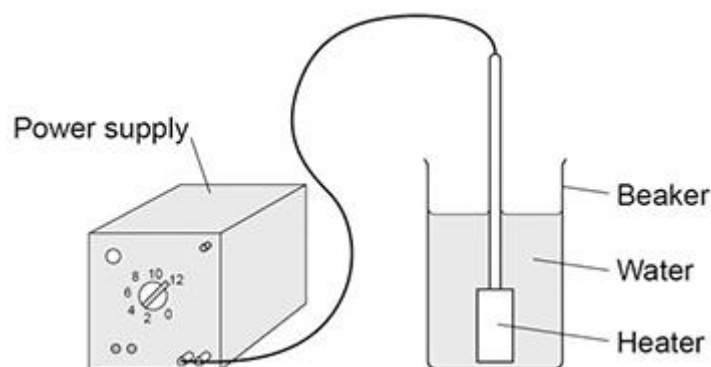
Explain why.

(4)
(Total 7 marks)

Q2.

A student determined the specific latent heat of vaporisation of water.

The figure below shows some of the equipment used.



This is the method used:

1. Put 50 cm^3 of water in a beaker.
2. Measure the mass of the beaker and water.
3. Use a heater to boil the water and keep it boiling for 600 seconds.
4. Measure the mass of the beaker and water after 600 seconds.

(a) What measuring instrument should be used to measure the volume of water?

(1)

(b) What is a hazard in the student's investigation?

Tick (✓) **one** box.

burns

☐

boiling water

☐

heatproof gloves

☐

safety goggles

☐

(1)

- (c) The initial mass of the beaker and water was 0.080 kg.

The final mass of the beaker and water was 0.071 kg.

The energy transferred by the immersion heater as the water boiled was 25 200 J.

Calculate the specific latent heat of vaporisation of water given by the student's data.

Give the unit.

Use the Physics Equations Sheet.

Specific latent heat of vaporisation = _____ Unit _____

(5)

- (d) Some thermal energy was transferred to the surroundings while the water was being heated.

Explain how this affected the student's value for the specific latent heat of vaporisation of water.

(2)

- (e) Some of the water evaporated before its temperature reached 100 °C.

Explain how this affected the student's value for the specific latent heat of vaporisation of water.

(2)

(Total 11 marks)