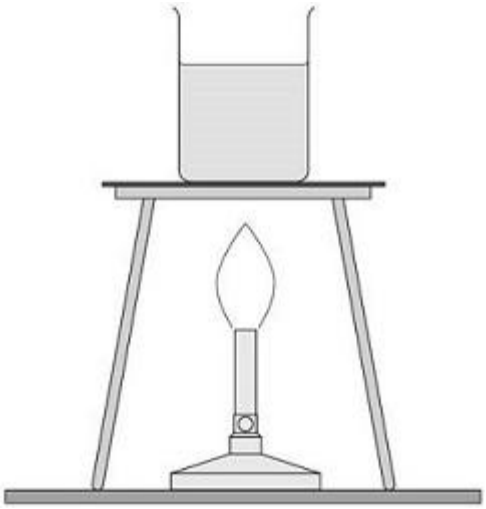
Name of the Student:_____

Max. Marks : 18 Marks **Time : 18 Minutes**

Q1.

The figure below shows a Bunsen burner heating some water in a beaker.
Eventually the water changes into steam.



(a) Explain how the internal energy of the water changes as it is heated from 20 °C to 25 °C

_____

_____

_____

_____

(2)

(b) How is the particle model used to explain the difference in density between a liquid and a gas?

Tick (✓) **one** box.

Particles in a gas have less kinetic energy than particles in a liquid.	☐
Particles in a gas have more potential energy than particles in a liquid.	☐
Particles in a liquid are further apart than particles in a gas.	☐

Particles in a liquid are larger than particles in a gas. ☐

(1)

(c) A student measured the mass of boiling water that was turned into steam in five minutes.

Explain how the student could use this information to estimate the power output of the Bunsen burner in watts.

_____

_____

_____

_____

_____

_____

_____

_____

_____

(4)

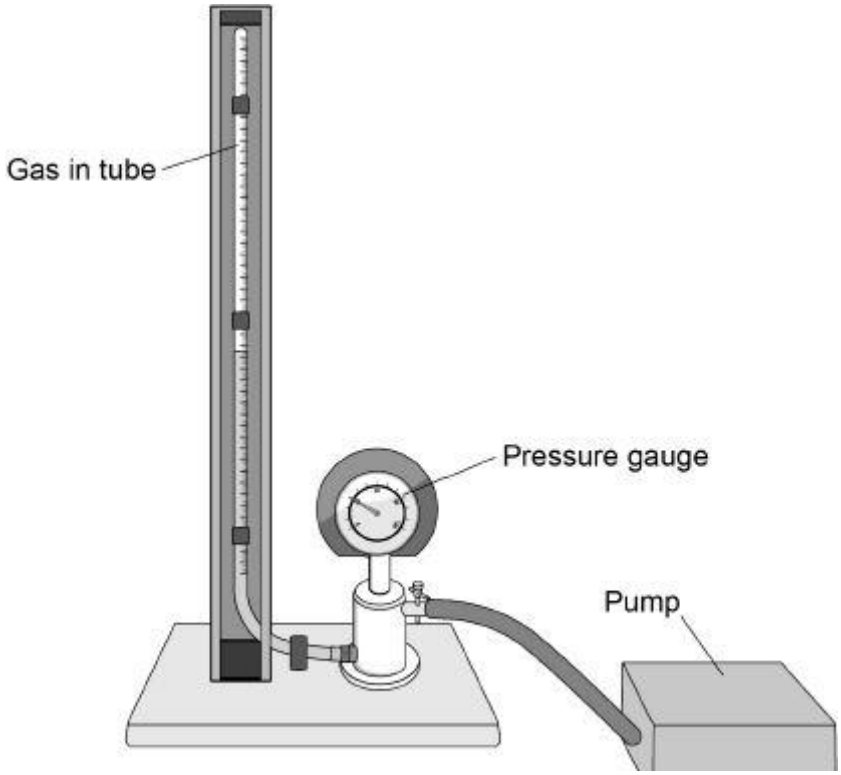
(Total 7 marks)

Q2.

A student investigated how the pressure exerted by a gas varied with the volume of the gas.

Figure 1 shows the equipment the student used.

Figure 1



A pump was used to compress the gas in a tube. As the volume of the gas decreases, the pressure of the gas increases.

(a) The student only recorded one set of results.

Give **two** reasons why taking repeat readings could provide more accurate data.

1. _____

_____

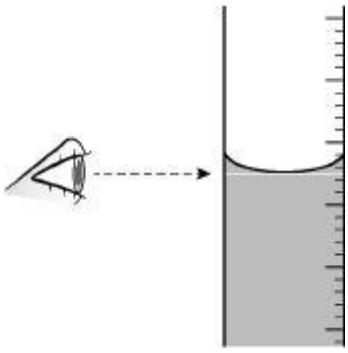
2. _____

_____

(2)

(b) **Figure 2** shows the position of the student's eye when taking volume measurements.

Figure 2



Explain what type of error would be caused if the student's eye was **not** in line with the level of the liquid in the tube.

_____

_____

_____

_____

(2)

(c) If the gas is compressed too quickly the temperature of the gas increases.

Explain how the temperature increase would affect the pressure exerted by the gas.

_____

_____

_____

_____

(2)

(d) One of the student's results is given below.

pressure = 1.6×10^5 Pa
volume = 9.0 cm^3

Calculate the volume of the gas when the pressure was 1.8×10^5 Pa.

The temperature of the gas was constant.

_____

_____

_____

_____

Volume = _____ cm^3

(3)

(e) **Figure 3** shows a person using a bicycle pump to inflate a tyre.

Figure 3

The internal energy of the air increases as the tyre is inflated.

Explain why.

_____

_____

_____

_____

(2)

(Total 11 marks)