1 **(a)** Explain the meaning of the term *base quantity*. Give an example of a base quantity.

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……..….

…….. [2]

(b) The volume V of a liquid flowing through a pipe in time t is given by the equation

$$\frac{V}{t} = \frac{\pi p r^4}{8CL} \ ,$$

where p is the pressure difference between the ends of the pipe of radius r and length L. The constant C depends on the viscous force acting on the liquid.

In an experiment to determine the numerical value of C for water, a student estimates the percentage uncertainties in his measurements as follows:

Quantity	Percentage uncertainty
V/t	3 %
p	2 %
L	0.5 %
r	1 %

Based on the data given, state and explain which is the most significant uncertainty.

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……..….

…….. [2]

(c) A body of mass 2.0 kg is moving on a smooth horizontal surface with a speed of 1.41 m s^{-1} in a north-easterly direction. A force of 0.20 N acting in a westerly direction is applied to the body for 10 s.

(i) Calculate the acceleration of the body due to the applied force.

Magnitude = …….. m s^{-2} [1]

Direction : ……... [1]

(ii) velocity of the body at the end of 10 s.

Magnitude = …….. m s^{-1} [3]

Direction : ……... [1]