

Answer **all** the questions in the spaces provided.

- 1 (a) (i) Define *pressure*.

..... [1]

- (ii) Show that the SI base units of pressure are $\text{kg m}^{-1} \text{s}^{-2}$.

[1]

- (b) Gas flows through the narrow end (nozzle) of a pipe. Under certain conditions, the mass m of gas that flows through the nozzle in a short time t is given by

$$\frac{m}{t} = kC \sqrt{\rho P}$$

where k is a constant with no units,
 C is a quantity that depends on the nozzle size,
 ρ is the density of the gas arriving at the nozzle,
 P is the pressure of the gas arriving at the nozzle.

Determine the base units of C .

base units [3]

[Total: 5]