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

1 (a) (i) Define *power*.

.....

.....[1]

(ii) Show that the SI base units of power are $kg\,m^2\,s^{-3}$.

[1]

(b) All bodies radiate energy. The power P radiated by a body is given by

$$P = kAT^4$$

where T is the thermodynamic temperature of the body,
A is the surface area of the body
and k is a constant.

(i) Determine the SI base units of k.

base units .....[2]

(ii) On Fig. 1.1, sketch the variation with T^2 of P. The quantity A remains constant.

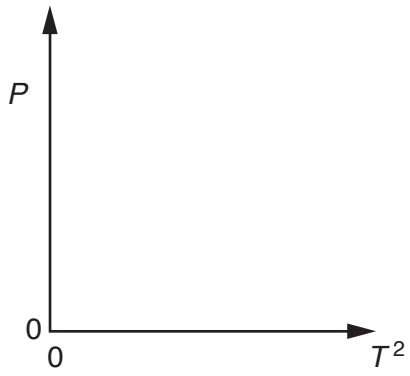

Fig. 1.1

[1]

[Total: 5]