**6** **(a)** State Hooke's law.

.....

..... [1]

**(b)** The variation with extension $x$ of the force $F$ for a spring A is shown in Fig. 6.1.

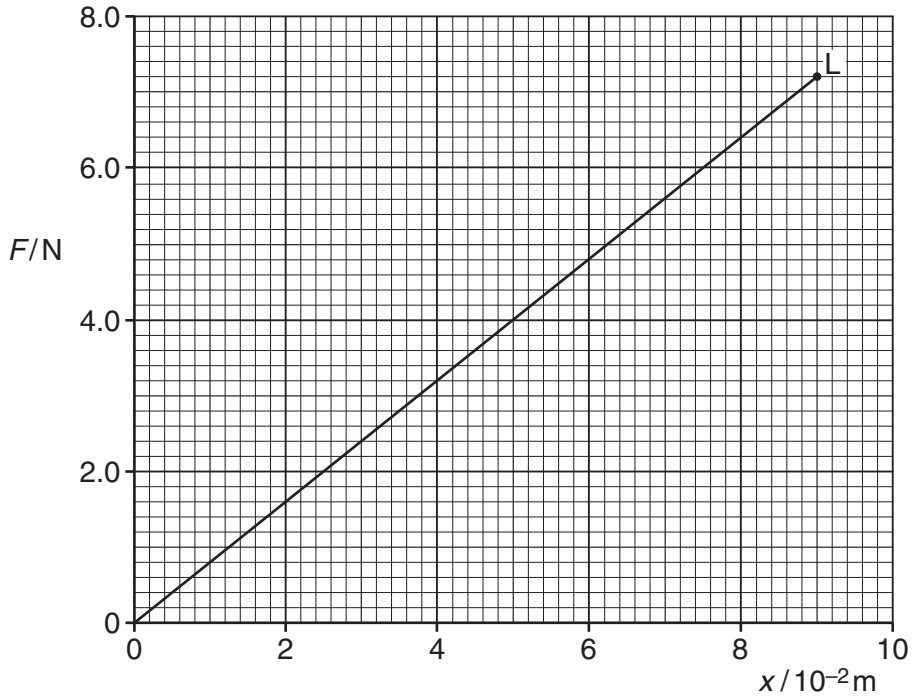


**Fig. 6.1**

The point L on the graph is the elastic limit of the spring.

**(i)** Describe the meaning of *elastic limit*.

.....

.....

..... [1]

**(ii)** Calculate the spring constant $k_A$ for spring A.

$k_A$ = ..... $N\,m^{-1}$ [1]

**(iii)** Calculate the work done in extending the spring with a force of 6.4 N.

work done = ..... J [2]

**(c)** A second spring B of spring constant $2k_A$ is now joined to spring A, as shown in Fig. 6.2.

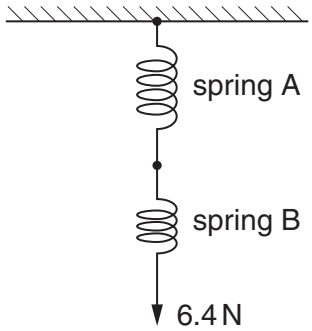


**Fig. 6.2**

A force of 6.4 N extends the combination of springs.

the combination of springs, calculate

**(i)** the total extension,

extension = ..... m [1]

**(ii)** the spring constant.

spring constant = ..... $N\,m^{-1}$ [1]