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

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.....

..... [1]

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

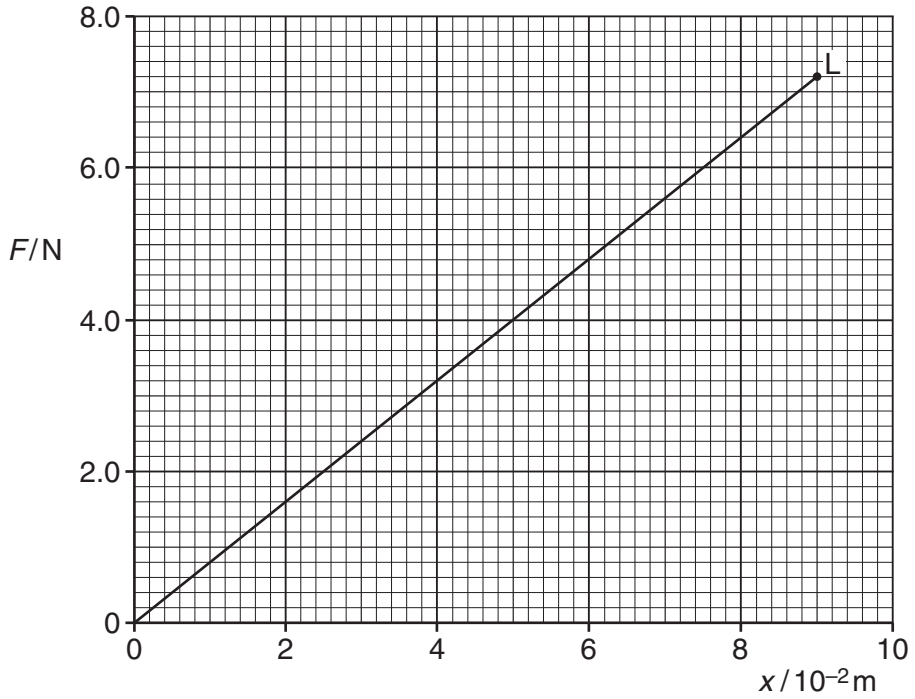

Fig. 6.1

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.

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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.

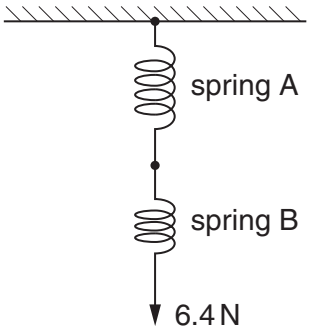

Fig. 6.2

A force of 6.4 N extends the combination of springs.

For the combination of springs, calculate

(i) the total extension,

extension = ... m [1]

(ii) the spring constant.

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