4 A spring is supported so that it hangs vertically, as shown in Fig. 4.1.

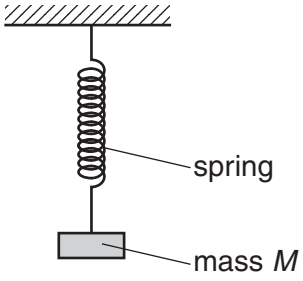

Fig. 4.1

Different masses are attached to the lower end of the spring. The extension *x* of the spring is measured for each mass *M.* The variation with *x* of *M* is shown in Fig. 4.2.

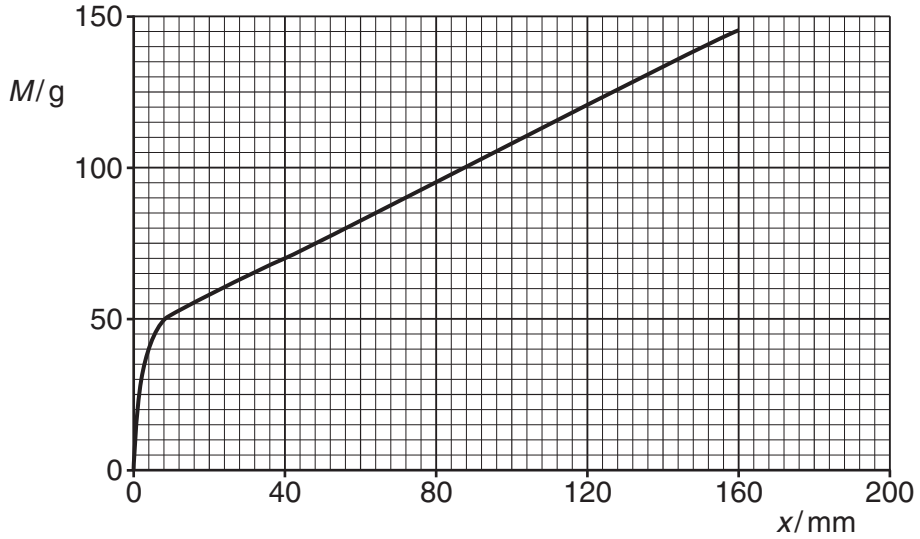

Fig. 4.2

(a) State and explain whether the spring obeys Hooke's law.

.....

.....[1]

(b) State the form of energy stored in the spring due to the addition of the masses.

.....[1]

(c) Describe how to determine whether the extension of the spring is elastic.

.....

.....[1]

(d) Calculate the work done on the spring as it is extended from $x = 40.0\,\text{mm}$ to $x = 160\,\text{mm}$.

work done = ...J [3]

[Total: 6]