6 A positive point charge +*Q* is positioned at a fixed point X and an identical positive point charge is positioned at a fixed point Y, as shown in Fig. 6.1.

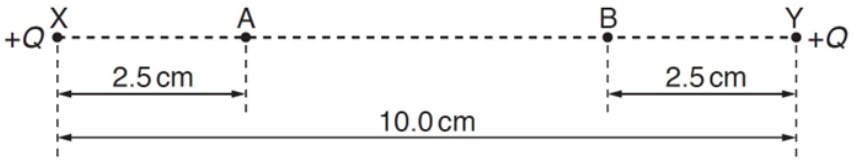

Fig. 6.1

The charges are separated in a vacuum by a distance of 10.0 cm.

Points A and B are on the line XY. Point A is a distance of 2.5 cm from X and point B is a distance of 2.5 cm from Y. The electric field strength at point A is 4.1×10^{-5} V m^{-1}.

(a) Calculate charge +*Q*.

+*Q* = ...C [2]

(b) On Fig. 6.2, sketch the variation with distance *d* of the electric field strength *E* from A to B, along the line AB.

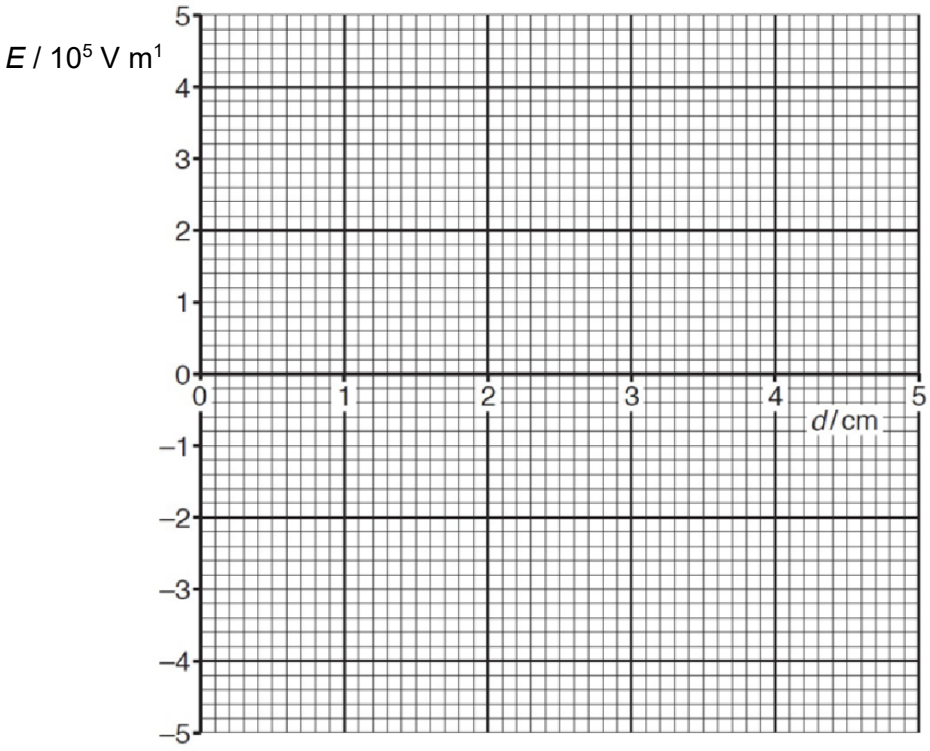

Fig 6.2

[2]

(c) A small positive charge is released at rest at d = 1.0 cm.

Using your graph in **(b)**, explain why the charge oscillates about a fixed point along the line AB.

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……...

……. [2]

[Total: 6]