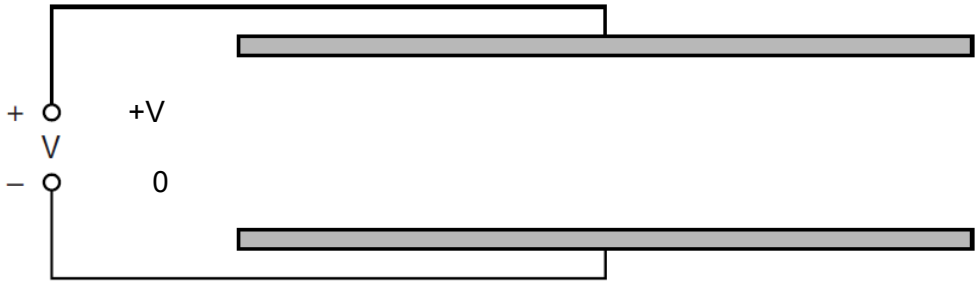
5 **(a)** Define *electric field strength*.

……
…….

……
…[1]

(b) In Fig. 5.1 draw the electric field lines between the parallel plates throughout the region, including the edges.



[2]

Fig. 5.1

(c) The plates in Fig. 5.1 are separated by a distance *d* and there is a potential difference *V* between them. A small charge of +*Q*, is moved from the centre of the negative plate up to the positive plate.

State an expression for the work *W* done on the charge

(i) in terms of *V* and *Q*,

W = ... [1]

(ii) in terms of the force F on the charge and d.

W = ... [1]

(d) Use your answers to **(c)** to deduce the relationship between the electric field strength between the plates and the potential gradient.

[2]
[Total: 7]