4 **(a)** Define *potential* at a point in an electric field.

.....

.....[1]

(b) Fig. 4.1. shows the equipotential lines of a non-uniform electric field.

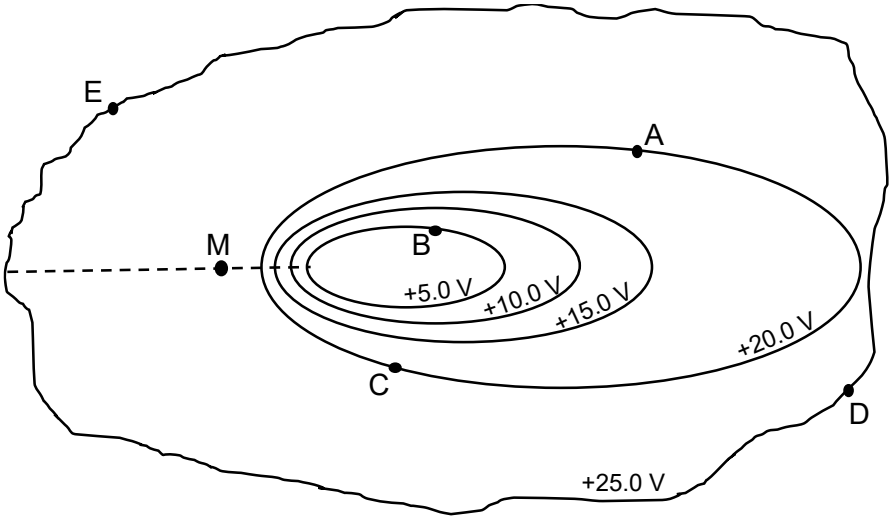

Fig 4.1

(i) State the potential difference between point A and point B.

potential difference = ... V [1]

(ii) Determine the work done to bring a charge of +5.0 μC from point B to point E, via point C and point D.

work done = ... J [2]

(iii) Explain whether the work done you have obtained in **(b)(ii)** is the work done by the electric field or the work done by an external agent.

.....

.....

.....

.....[2]

(c) **(i)** State the relation between electric field strength and potential.

.....

.....[1]

(ii) Draw an arrow at point D in Fig. 4.1 to show the direction of the electric field strength at that point. [1]

(iii) Another positive charge is released from point M in Fig. 4.1. It moves along the dotted line.

Describe, without further calculation, the motion of this positive charge along the dotted line.

.....

.....

.....[2]

[Total: 10]