3 **(a)** Define *electric potential*.

....

....[1]

(b) Fig. 3.1 shows a square ABCD of sides 2.0 cm. Three negative point charges of $-1.2 \ \mu C$ are fixed at B, C and D.
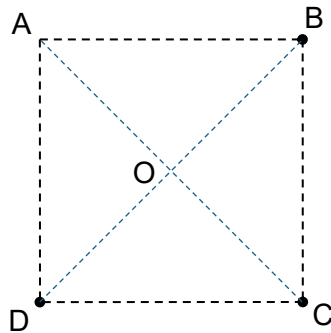

Fig. 3.1

(i) Fig. 3.1, draw and label each of the forces acting on the charge at C due to the charges at B and D.

[1]

(ii) Determine the magnitude and direction of the resultant force acting on the charge at C due to the charges at B and D.

magnitude = ……………………..N

direction = ……….…..…………….   [3]

(iii)   Determine the electric potential at the centre of the square, O, due to the three charges at B, C and D.

electric potential = …………..……………V [3]

(iv)   Determine the work done in bringing a positive charge of 1.2 μC from 100 m away to the centre of the square.

work done = ………..……………. J [2]

[Total: 10]