

Q1 p95.

a) $E = \frac{V}{d} = \frac{600}{1.2 \times 10^{-2}} = 50,000 \text{ V/m.}$

b) i) upwards of magnitude equal to weight, $3.3 \times 10^{-14} \text{ N.}$

c) $F = Eq \Rightarrow q = \frac{F}{E} = \frac{3.3 \times 10^{-14}}{50,000}$
 $= 6.6 \times 10^{-19} \text{ C.}$

ii) it accelerates upwards with acceleration $3.3 \times 10^{14} \text{ g}$ since unbalanced force is equal to weight.

Q1 p101

1) ~~B~~ $F = BIL \Rightarrow B = \frac{F}{IL} = \frac{\text{N}}{(\text{C/s}) \text{ m}}$
 $= \text{N C}^{-1} \text{ s m}^{-1}$

2) a) From left hand rule, down

b) From left hand rule, ~~down~~ up.

c) $F = BIL = 0.3 \times 10^{-3} \times 0.24 \times 60 \times 10^3$
 $= 4.32 \times 10^{-6} \text{ N.}$