1 (a) an expression for work done, in terms of force, to show that the SI base units of energy are $kg\,m^2\,s^{-2}$.

[2]

(b) (i) The energy E stored in an electrical component is given by

$$E = \frac{Q^2}{2C}$$

where Q is charge and C is a constant.

this equation and the information in **(a)** to determine the SI base units of C.

SI base units .... [2]

(ii) Measurements of a constant current in a wire are taken using an analogue ammeter.

these measurements, describe one possible cause of:

1. a random error

....

....

2. a systematic error.

....

....

[2]

[Total: 6]