5.   Given the relationships:

$$X \text{ pu} = \frac{\text{MVA base}}{\text{MVA fault}}$$

$$= \frac{\text{MVA base}}{\text{MVA rated}} \times \frac{X\%}{100}$$

$$\text{fault MVA} = \sqrt{3}VI_{\text{fault}}$$

$$X\Omega = \frac{V}{\sqrt{3}}I_{\text{fault}}$$

show that   (a)   Fault MVA $= \dfrac{\text{MVA rated}}{X\%} \times 100$

(b) $X \text{ pu} = \dfrac{\text{MVA base}}{V^2} \times X\Omega$

and hence calculate the pu impedance of 100 m of 3 single core 415 V cables in trefoil. Take the cable impedance to be 90 microhms per metre. Use a 1 MVA base. Neglect the resistance of the cables.