1. Describe the following terms and give their symbol and units (if they have one).
   1. Electric Flux Density
   2. Electric Flux
   3. Capacitance
   4. Electric Field
   5. Charge
   6. Permittivity
   7. Permittivity of free space
   8. Relative Permittivity  
        
      You may use a table to tabulate your answer.
2. Explain what a dielectric is, it’s properties, and typical examples of what can be used as a dieletric.
3. State 4 different types of capacitor.
4. Sketch a model of a parallel plate capacitor and label relevant parts and phenomena.
5. A capacitor has a plate area of 65mm2 and a distance of 3mm between the plates. Calculated capacitance when the dielectric has a relative permittivity of 125.  
     
   (ε0 = 8.854 x 10-12 F/m)
6. The dielectric material for the capacitor in question 5 is then removed. Calculate the new capacitance if it is replaced with air.
7. A voltage of 1020V is applied to the capacitor in question 6. Calculate:
   1. The charge in the capacitor
   2. The energy (work done) buy the capacitor.
8. Consider the capacitor network below:  
     
     
     
     
     
     
     
     
     
     
   Calculate:

15pF

5pF

600V

12pF

9pF

36pF

* 1. The total capacitance
  2. The total charge
  3. The voltage across each capacitor
  4. The energy (work done) on each capacitor