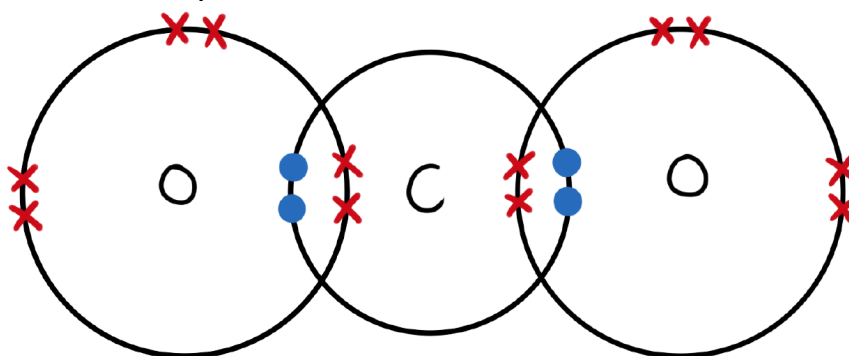


Name:

Class:



Draw a dot and cross diagram of a molecule of carbon dioxide.
Show the outer electrons only.



Describe the test to show that calcium carbonate contains carbonate ions.

Test: add acid (any acid) to the sample.

Result: if the sample produces a gas, bubble the gas through the limewater.

If the limewater goes cloudy then carbonate ions are present.

Describe a test for sulfate ions.

Test: add some HCl or HNO₃ solution then add a few drops of barium chloride solution.

Result: if the sample contains sulfate ions the sample will go white.

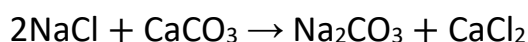
Give the electronic configuration of a calcium atom.

2, 8, 8, 2

Calculate the relative formula mass of calcium chloride, CaCl₂.

40 + 2(35.5) = 111

The equation below shows the reaction to produce sodium carbonate and calcium chloride.



Calculate the maximum mass of sodium carbonate that could be formed by reacting 40 kg of calcium carbonate with an excess of sodium chloride solution.

Moles of CaCO₃ = mass ÷ Mr

Mass of Na₂CO₃ = mols × Mr

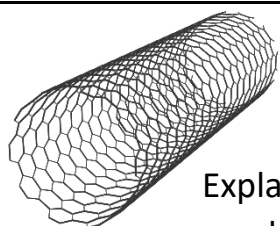
Moles of CaCO₃ = 40 ÷ 100

Mass of Na₂CO₃ = 0.4 × 106

Moles of CaCO₃ = 0.4

Mass of Na₂CO₃ = 42.4 kg

Mass of Na₂CO₃ = **42.4 kg**

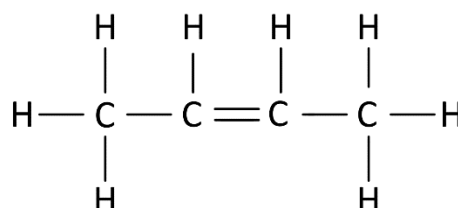


The figure shows a carbon nanotube.

Explain why carbon nanotubes conduct electricity.

Carbon nanotubes have delocalised electrons which can move and carry charge.

Name the following compound.



Butene