Week 5 question: (NZIC 2009)

Consider compounds **A**, **B** and **C** with the molecular formula C5H12O.

* + Compound **A** reacts to K2Cr2O7/H+(*aq*) to give **D** (C5H10O). Neither **A** or **D** exist as enantiomers.
  + Compound **B** also reacts with K2Cr2O7/H+(*aq*) to give **E** (C5H10O2). Both **B** and **E** exist as enantiomers.
  + Compound **C** reacts with K2Cr2O7/H+(*aq*) to give **F** an isomer of **D**. Compound **C** exists as enantiomers but compound **F** does not. Compound **C** reacts with concentrated H2SO4 to give two different alkenes (**G** and **H**), neither of which exists as *cis-trans* isomers.

Draw the structures and name each of the compounds **A** to **H.**

Week 5 answer: (NZIC 2009)

 

A = pentan-3-ol D = pentan-3-one

 

B = 2-methylbutan-1-ol E = 2-methylbutanoic acid

   

C= 3-methylbutan-2-ol F = 3-methylbutan-2-one **G**(**or H**)= 3-methylbut-1-ene **H(or G)** = 2-methylbut-2-ene

Week 6 question: (NZIC 2005)

An organic compound, **A**, has the molecular formula C3H7OBr.

**A** can be hydrolysed to **B**, C3H8O2.

Careful oxidation of **A** yields compounds **C**, C3H5OBr, and **D**, C3H5O2Br.

**D** can be hydrolysed to **E**, C3H6O3.

On oxidation, **E** yields **F**, C3H4O3 and **G**, C3H4O4.

(a) Write structural formulae for each of the compounds **A** – **G**.

(b) Describe, with reference to physical and chemical properties, how the two products **C** and **D** can both be isolated from the oxidation of **A,** and then identified.

(c) Show how compound **A** can be used as the starting material for the polymer

