Week 2 question: (NZIC 2008)

a) Alkenes are known to react with ozone, O3, followed by reaction with zinc and acid as shown in the following example.



α-terpinene, C10H16 is a hydrocarbon that has been isolated from oil of marjoram. On reaction with hydrogen over a palladium catalyst, α-terpinene absorbs 2 molar equivalents of hydrogen to yield a hydrocarbon C10H20. On ozonolysis, followed by reduction with zinc and ethanoic acid, α-terpinene yields ethandial and 6-methylheptan-2,5-dione.

Draw the structures of

* ethandial and 6-methylheptan-2,5-dione
* α-terpinene
* the major product formed on reaction of α-terpinene with HBr

Week 2 answer: (NZIC 2008)

 

Ethandial 6-methylheptan-2,5-dione

 

**α-terpinene major product of reaction with HBr**

Week 3 question: (NZIC 2011)

(a) Diesel can be assumed to be made up of a saturated hydrocarbon with molecular formula C14H30.

Calculate the amount of energy produced when 1.00 mL of diesel is completely combusted.

Density (C14H30) = 0.832 g mL–1 *M*(C) = 12.0 g mol–1, *M*(H) = 1.00 g mol–1

Bond energies (kJ mol–1):

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| C–C | C–H | C=O | O–H | O=O |
| 346 | 414 | 745 | 464 | 494 |