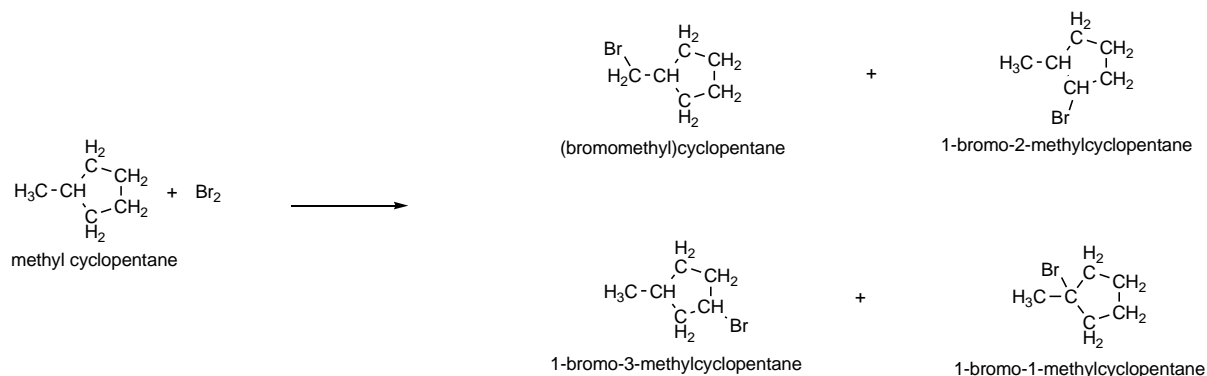## Correction to assignment II question 6

Consider the reaction below; the reactivities of tertiary, secondary and primary hydrogens are 1700:5:1; respectively. Predict the percentage yield of each of the products.

(bromomethyl)cyclopentane

1-bromo-2-methylcyclopentane

1-bromo-3-methylcyclopentane

1-bromo-1-methylcyclopentane

methyl cyclopentane

The types hydrogen present can then be summarised as follows:

1. Total number of 3° H = 1
2. Total number of 2° H = 4
3. Total number of 2° H = 4
4. Total number of 1° H = 3

Relative reactivity (RR) of 3° H product (1-bromo-1-methylcyclopentane) = RR of 3° H X N<u>o</u> of 3° H

$$= 1700 \times 1 = 1700$$

RR of 2° H product (1-bromo-2-methylcyclopentane) = RR of 2° H X N<u>o</u> of 2° H

$$= 5 \times 4 = 20$$

RR of 2° H product (1-bromo-3-methylcyclopentane) = RR of 2° H X N<u>o</u> of 2° H

$$= 5 \times 4 = 20$$

RR of 1° H product ((bromomethyl)cyclopentane) = RR of 1° H X N<u>o</u> of 1° H

$$= 1 \times 3 = 3$$

Total relative reactivity of the products = $= 1700 + 20 + 20 + 3 = 1743$

% yield of 3° H product (1-bromo-1-methylcyclopentane) = $\left(\frac{1700}{1743}\right) 100$

$$= 97.5\%$$

% yield of 2° H product (1-bromo-2-methylcyclopentane) = $\left(\frac{20}{1743}\right) 100$

$$= 1.2\%$$

% yield of 2° H product (1-bromo-3-methylcyclopentane) = $\left(\frac{20}{1743}\right) 100$

$$= 1.2\%$$

% yield of 2° H product ((bromomethyl)cyclopentane) = $\left(\frac{3}{1743}\right) 100$

$$= 0.1\%$$