國立嘉義大學九十三學年度
生物藥學研究所碩士班招生考試試題

科目：有機化學

1.(1) What is the empirical formula of an organic compound whose percentage composition is 40.0% C, 6.7% H, and 53.3% O.(2) If the molecular weight is found to be 120 g/mol. What is the molecular formula? (20%)

2.(1) Draw stereochemical formulas for all the possible stereoisomers of the following compounds. Label pairs of enatiomers, and *meso* compounds. Tell which isomers, if separated from all other stereoisomers, will be optical active. Give one isomer of each set its R/S specification. (10%)
(a) $CH_3CHBrCHOHCH_3$ (b) $HOCH_2(CHOH)_3CH_2OH$

(2) Draw all of the possible conformations of methylcyclohexane and show which one is more stable than others. Why? (10%)

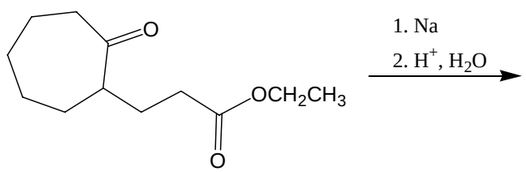
3. Arrange the compounds of each set in order of reactivity toward SN_2 displacement：(10%)
(1) 1-bromobutane, 1-bromo-2, 2-dimethylpropane, 1-bromo-2-methylbutane, 1-bromo-3-methylbutane

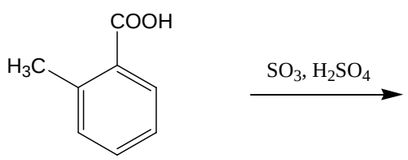
(2) 2-bromo-2-methylbutane, 1-bromopentane, 2-bromopentane

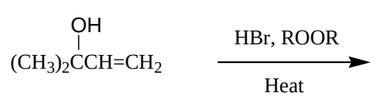
4. Give the structures and names of the chief organic products excepted from the reaction (if any) of isopropyl alcohol with: (10%)

(a) P + I_2 (b) NaOH (aq) (c) Br_2/CCl_4 (d) Na (e) tosyl chloride, OH^-

5. Write the expected major product(s) of each of the following reactions. (20%)

(a)


(b)


(c)


6. This compound has the formula $C_9H_{12}O$. This compound that is consistent with the IR and ^1H NMR spectra in the following figure. The carbon-13 spectrum shows peaks at 28, 31, 57, 122, 124, 125, and 139 ppm. Determine structure of this compound. (20%)