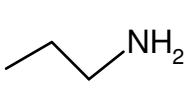
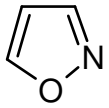
Exercise to the lecture „Modern Methods in Drug Discovery“ WS13/14

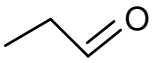
3rd Assignment to be handed in until 25.11.2013

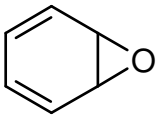
your name:

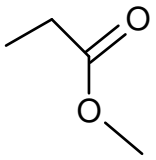
1. Report the appropriate SMILES for the following compounds. No computer generated SMILES please ! (30 points)

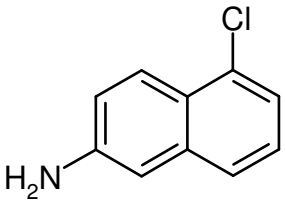












2. Draw the according structure of the given SMILES. Please add all hydrogens. (40 Points)

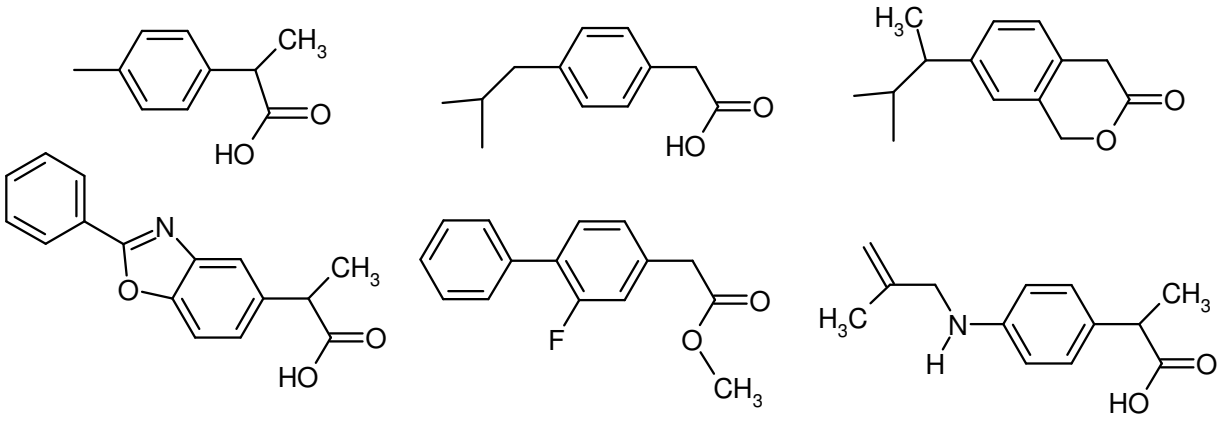
CC(=O)N1CCC(C(=O)N)C1

FS(=O)(=O)Nc1ccc(C)cc1

CC(C)Cc1ccc(C(C)C(=O)O)c(Cl)c1

c1ccccc1C2=C(c3ccc(NC)cc3)COC2(=O)

3. Find the maximum common subtructure of the following compounds and report its corresponding SMILES. Keep in mind that „CO“ matches H_3C-OH as well as H_3C-CH_2-O-CH_3 (only non-hydrogen atoms are considered) (20 points)



4. Which of the QSAR equations (A or B respectively C or D) is „better“ ? (According to which criteria ?) (10 points)

n: number of molecules; r^2: squared correlation coefficient;
q^2: cross-validated r^2; *s*: standard error

A) log $1/K_i$ = 0.26(±0.14)ClogP – 1.36(±0.43)NHB + 9.66(±0.39)HL

where $n = 21$, $r^2 = 0.853$, $q^2 = 0.746$, $s = 0.326$

B) log $1/K_i$ = 0.34(±0.13)ClogP – 0.96(±0.27)MR + 0.85(±0.19)B5Y

where $n = 21$, $r^2 = 0.853$, $q^2 = 0.847$, $s = 0.302$

C) log 1/C = 0.26(±0.14)ClogP – 1.36(±0.43)MR + 9.66(±0.39)B5Y

where $n = 16$, $r^2 = 0.841$, $q^2 = 0.654$, $s = 0.354$

D) log 1/C = 0.23(±0.15)ClogP – 1.20(±0.56)MR + 10.74(±0.67)B5Y – 0.62(±0.12)NN4 + 0.14(±0.05)GEOM6

where $n = 16$, $r^2 = 0.892$, $q^2 = 0.672$, $s = 0.295$