DEPARTMENT OF MEDICINAL CHEMISTRY
SCHOOL OF PHARMACY

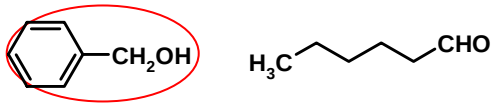
Medicinal Chemistry I — MEDC 501
Dr. Umesh R. Desai — September 13, 2006

KEY

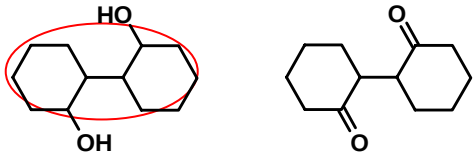
STUDENT NAME **HONOR PLEDGE**

	IV	V	VI	VII
2	C	N	O	F
3	Si	P	S	Cl
4	Ge	As	Se	Br
5	Sn	Sb	Te	I

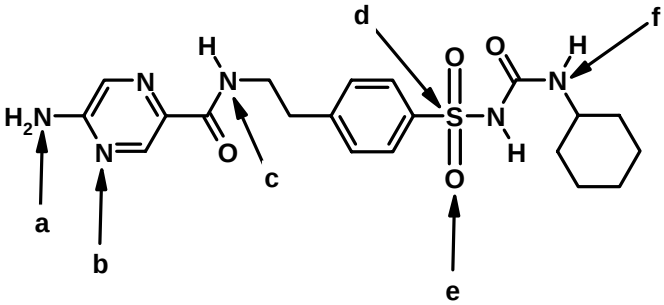
1. Circle the compound with higher boiling/melting point in the following pairs. (6 pts)

a) 

b) 

C) 

2. Glipizide (below) is an oral hypoglycemic agent. Write the Kier – Hall electronegativity value and hybridization state of each non-hydrogen atom marked '***a***' through '***f***' (6 pts)



Kier-Hall electronegativity	Hybridization State
a = 2/4	sp3
b = 3/4	sp2
c = 2/4	sp3
d = 4/9	do not answer
e = 5/4	sp2
f = 2/4	sp3

3. An inductive effect is ___the transfer of electronegative negative effect of an atom or a group of atoms to the neighboring bond through sigma bonds resulting in more or less electron withdrawal._____. **(Define in one sentence)** (4 pts)

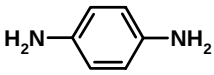
4. Rank these molecules according to their pKa values. (1 for least pKa value and 4 for highest) (8 pts)

$CH_3CH_2CH_2COOH$	$CH_3NO_2CHCH_2COOH$	$CH_3CH_2NO_2CHCOOH$	$CH_3NO_2CHCH_2COOH$
4	**2**	**1**	**3**

5. Two examples of electron donating groups (for resonance effect), which are electron withdrawing groups for inductive effect are _____ and _____ (4 pts)

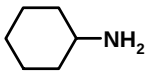
-OH, $-OCH_3$, $-NH_2$, - $NHCH_3$, -Cl, -Br, -F, -I

6. Rank the following molecules according to their pK_A values for the $-NH_2$ group (1 for the least pKa value and 3 for the highest) (6 pts)



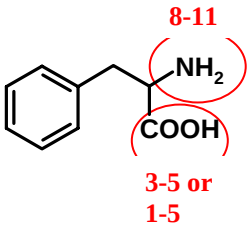
2

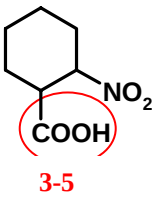
1

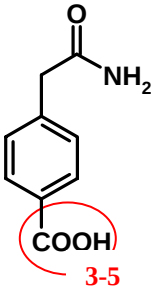


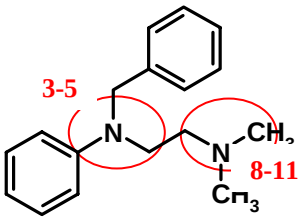
3

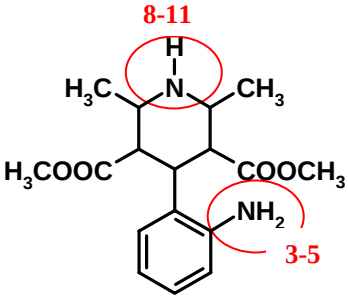
7. In the following structures, circle an ionizable functional group(s) (pH range 0 – 14) and indicate their approximate pK_A value. **Please NOTE. -1 point for every wrong answer!** (8 pts)



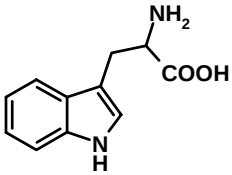


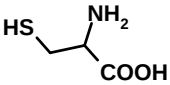






8. Identify the common name of the following natural amino acid residues. (8 pts)





_____ _____

Tryptophan **Cysteine**