DEPARTMENT OF MEDICINAL CHEMISTRY
SCHOOL OF PHARMACY

Medicinal Chemistry I — MEDC 501
Dr. Umesh R. Desai — September 11, 2007

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

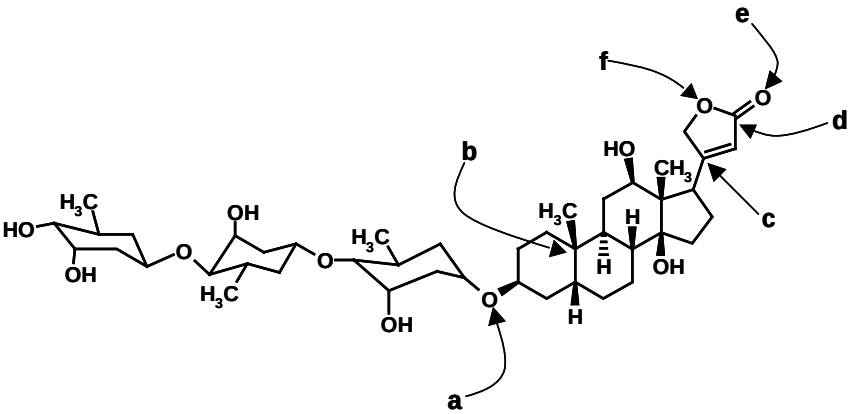
1. Circle the compound with higher boiling/melting point in the following pairs. (6 pts)

a) 

b) 

C) 

2. Digoxin (below) is used for congestive heart failure. Write the Kier – Hall electronegativity value and hybridization state of each non-hydrogen atom marked '***a***' through '***f***' (6 pts)



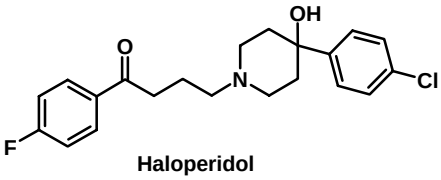
Kier-Hall electronegativity	Hybridization State
a = 1.0	sp3
b = 0.0	sp3
c = 0.25	sp2
d = 0.25	sp2
e = 1.25	sp2
f = 1.0	sp3

3. A hydrogen – bond is formed between two strongly electronegative atoms that sandwich a hydrogen atom. For example, structures of the type N-H….O and F…..H-N represent hydrogen bonds. (4 pts)

4. Rank these molecules according to their pKa values. (1 for least pKa value and 4 for highest). NOTE: Each structure shown is a salt form of the parent amine. (8 pts)

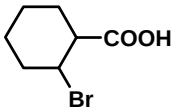
$CH_3CH_2CH_2NH_3Cl$	$O_2NCH_2CH_2CH_2NH_3Cl$	$CH_3CH_2NO_2CHNH_3Cl$	$CH_3NO_2CHCH_2NH_3Cl$
4	3	1	2

5. In stomach, haloperidol (below) will primarily exist in the acid (acid/base) form. (4 pts)

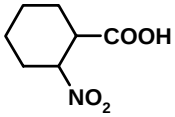


Haloperidol
(An antipsychotic drug)

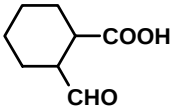
6. Rank the following molecules according to their acidity (1 for the least acidic and 3 for the most) (6 pts)



1

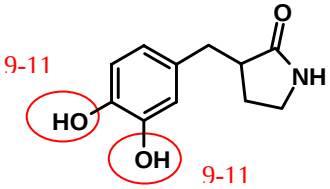


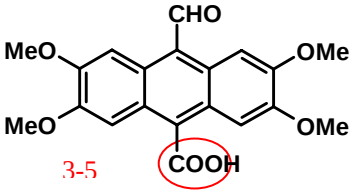
3

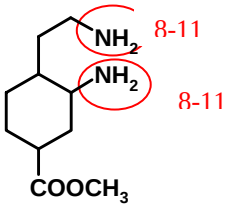


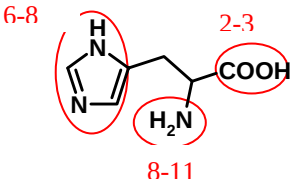
2

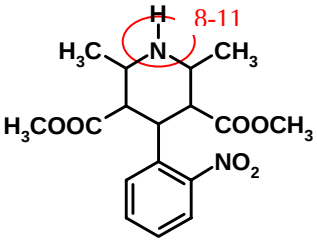
7. In the following structures, circle an ionizable functional group(s) (pH range 0 – 14) and indicate their approximate pK_A value. **Please NOTE. -1 point for every wrong answer!** (8 pts)



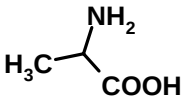








8. Write the common name of the following natural amino acid residues. (8 pts)



alanine

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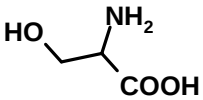

serine

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