CHEMISTRY 350 PROBLEMS, Based on Wade Version 7

FALL 2016 Dr. Craig P. Jasperse (Note: if you have the 6th edition of Wade or a Carey textbook, lists of problems are linked from my website, or you can email me to get the list.)

Chapter Topic	Ch	Wade 7 Problems In the Chapter	Wade 7 Problems Back of the Chapter
Intro and Review	**1**	1(Si only), 2a-f, 3a-g, 4, 5a-c, 6(all!), 7a,b,d,e,g, 8a,e,f,g,h, 9, 10d-h, 11, 15, 17a, 18a-c, 19a-f [determine which is the "nucleophile" (electron pair donor) and which is the "electrophile" (electron pair receiver), and draw the arrows to show bond making and breaking. Do not do the "Bonsted-Lowry" discussion.]	21, 23, 25-29, 31, 32, 34-37, 40-43, (for 42 and 43, you should be able to process H_2SO_4 by memory, the others by structure without needing to look at a list of acidity values), 44 (use nucleophile/electrophile designation, and definitely practice the arrow pushing), 46
Structure and Properties	**2**	1b (draw), 2 (skip part about 104.5° angle as opposed to 109° angle), 3, 4, 5a-f, 7a,b, 8, 9, 10 (three do, three don't; beware of "e", which is deceptive), 11, 16, 17 (omit a), 18-20, 21 (skip d), 22 [Note: for functional group problems, skip the "cyclic" designation!]	27, 28, 29 (we will see this is crucial to the performance of all proteins!), 30, 31, 33-35, 38-40, 41 (skip c), 42, 44
Alkanes	**3**	1a, 2a, 3, 4a-e, 5, 6a,b, 7a,b, 9a, 11- 13, 15b-d, 16, 17a,b, 18-21, 25-29	33, 34 (omit c and d), 35 (omit b), 37 (omit e,g,h), 38, 39, 40b, 42, 43a,b, 44, 46
Chemical Reactions.	**4**	1a-c, 2, 3, 4a, 9a, 11-13, 15, 16, 18, 19a-d, 24, 25, 28-32.	35-39, 41, 42a, 43, 44, 46 (skip d) (Be Sure to do 46, very important)
Stereo chemistry	**5**	2 (label as chiral or achiral. If chiral, also draw the enantiomer.), 3 (star chiral C's, identify each chiral molecule, and be able to draw the enantiomers.), 4, 5 (assign as chiral or achiral), 6 [skip f,g. For all others, give the (R)/(S) designations.], 14, 20a-e, 21 (skip f), 22, 23c	26a,c,d,j-p , 27, 30d, f-h 31a, f-i, 36
Alkyl Halides: SN2, SN1, E2, E1 Reactions	**6**	1, 2c,e,f, 3 (parts 1 and 3, don't classify B or name k), 6, 7 (the density of chloroform is 1.50), 8a, 10 S_N2 Reactions: 11-13, 14a,b,d,e, 15(skip b,g), 16, 18 (skip neopentyl bromide. And, substitution is more important than leaving group), 19a,b, 20(skip c,e,f), 21 [(the catch here is to understand why inversion can occur if (S) goes to (S)] S_N1 Reactions: 22, 23, 24, 25, 26 (skip the mechanisms, but note how rearrangement forms a more stable cation), 27, 29 (very interesting. Probably not test fodder.) Elimination reactions: 30, 31, 32, 33b-d, 34-39, 40	42a,c-e, 43a-c,e,f, 44**, 45("solvolysis" is substitution by solvent, and is always S_N1), 46, 48-54, 56, 59-61
Alkenes	**7**	1 (for b, counting geometric isomers, I count 14 possible alkene isomers and 15 possible cyclic isomers! The answer book only shows a few of the possibilities.), 4, 5a,b,c,f,g,h, 6a,d,e, 7a,c,e(name is ambiguous), 8a,c,e, 10a-d (more stable only. Skip the part about how much difference in energy), 12a,c, 13, 16, 17, 18, 19, 24, 25, 27-29 (note: in 28a, 29c,d cation rearrangements occur. I won't ask for mechanisms with cation rearrangement on your test, but a simple elimination of H_2O such as 29b or c is extremely likely.)	31, 32a,b,d, 33, 34 (for part c: how many rings does it have?), 36a-c, 38 (try to predict the major product. For test purposes I usually wouldn't want the minors), 39a,b,d (the point is to predict the major product), 44, 45
Alkene Addition Reactions	**8**	1-4, 6, 8-11, 13-21(look at answer to e, just for interest sake), 22 (for b, book answer is poor. Should use a hindered base), 23, 24, 29, 30 (mech for ring-opening only), 32b,d, 33, 34b-f, 35 (d,l means racemic mix of chiral products), 36, 37	47 (good practice for "predict the product" reactions.), 48a, b, c,e,f 49a,b,c,d,e,f,h, 50a-l, 59-61, 68
Conjugated Systems	**15**	1, 2, 4, 5, 6, 7(skip c), 9, 10-11(NBS=Br_2/hv), 12, 13, 14, 15 (skip d), 16 (ignore stereochem), 18	24, 25a-d,g-i, 26, 27, 30, 31, 33a-f
Aromatics	**16**	3(skip cyclooctatetraene), 5, 7b-d, 8, 9a, 10, 11, 12, 15, 16 (purine picture on top of page), 19, 24a, c,e,g	27a-f, 28a-c,e,f, 29, 32, 34 (hint: N lone pairs are strongly basic when sp^3 or sp^2 but weakly basic when p), 35, 36, 37 ("xylene" means dimethyl benzene), 43
Aromatic Reactions	**17**	2, 4(p-xylene is 1,4-dimethylbenzene), 6, 7, 8, 9, 12a, 14, 15, 16b(i-iv), 17a,c, 20a-c, 21, 22(skip c,d), 33, 34 (1), 36, 37	44a,b,d,f,h,j,l, 45, 46a,b,e,f,g, 47b-f,h,i,j,l, 48, 49, 51, 57, 60, 61