

Chem 250**In-class Quiz #2**

This exam is composed of **16** questions.

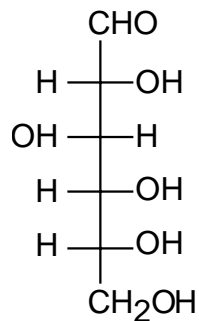
As discussed in the course syllabus, honesty and integrity are absolute essentials for this class. In fairness to others, dishonest behavior will be dealt with to the full extent of University regulations.

I hereby state that all answers on this exam are my own and that I have neither gained unfairly from others nor have I assisted others in obtaining an unfair advantage on this exam.

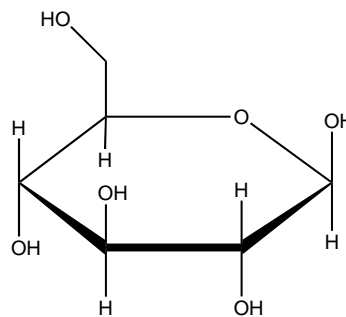
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PERIODIC TABLE OF THE ELEMENTS

1A	2A	3B	4B	5B	6B	7B	8B	8B	8B	1B	2B	3A	4A	5A	6A	7A	8A
1 H 1.008																	2 He 4.003
3 Li 6.939	4 Be 9.012											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.31											13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.07	17 Cl 35.45	18 Ar 39.95
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.90	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.85	27 Co 58.93	28 Ni 58.71	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.61	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (99)	44 Ru 101.1	45 Rh 102.9	46 Pd 106.4	47 Ag 107.9	48 Cd 112.4	49 In 114.8	50 Sn 118.7	51 Sb 121.8	52 Te 127.6	53 I 126.9	54 Xe 131.3
55 Cs 132.9	56 Ba 137.3	57 La 138.9	72 Hf 178.5	73 Ta 181.0	74 W 183.8	75 Re 186.2	76 Os 190.2	77 Ir 192.2	78 Pt 195.1	79 Au 197.0	80 Hg 200.6	81 Tl 204.4	82 Pb 207.2	83 Bi 209.0	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra 226.0	89 Ac 227.0	104 Unq (261)	105 Unp (262)	106 Unh (263)	107 Uns (262)	108 Uno (265)	109 Une (266)									

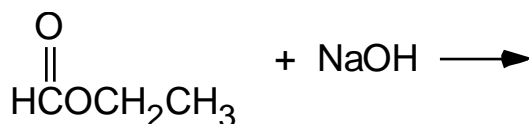


D-glucose

 β -D-Glucose

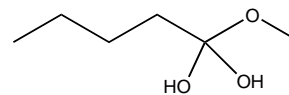
1. (5 points) The geometry around the carbon of a carboxylic acid group is:
1) tetrahedral 2) trigonal planar 3) linear 4) octahedral
2. (5 points) In general, which is more reactive, an ester or an anhydride?
1) ester 2) anhydride

3. (8 points) The products of the following reaction are:



- 1) sodium propanoate and water
2) ethanol and sodium formate
3) sodium acetate and formaldehyde
4) methane and sodium acetate
5) none of the above
4. (5 points) Which of the following is expected to have the highest melting point?
1) $\text{CH}_3(\text{CH}_2)_{18}\text{COOH}$
2) $\text{CH}_3(\text{CH}_2)_{10}\text{COOH}$
3) it is not possible to predict
5. (5 points) Circle the stronger acid: Cl_3CCOOH Cl_2CHCOOH

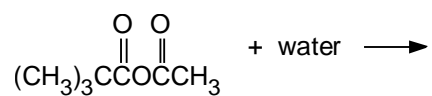
6. (8 points) Which two reactants would lead to the Fischer esterification reaction intermediate shown at right?



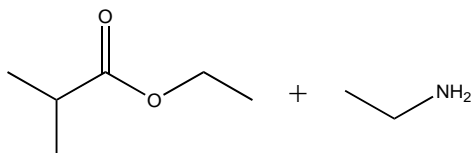
- 1) pentanal and formic acid
2) pentanoic acid and methanol
3) 1-pentanone and formic acid
4) hexanoic ester and water
5) none of the above

7. (8 points) Draw the hemiacetal structure of the product formed by reaction of butanal with ethanol.

8. (8 points) Draw the structural formula for the major organic product of the reaction below:

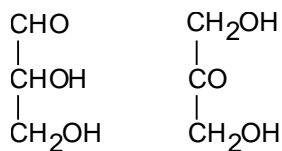


9. (8 points) Draw the structural formulas for major products of the reaction below:

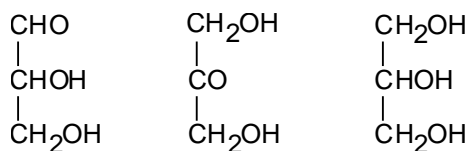


10. (8 points) Draw the structural formula for the major product of the reaction of 2,2-dimethylpropanoic acid and LiAlH_4 in water:

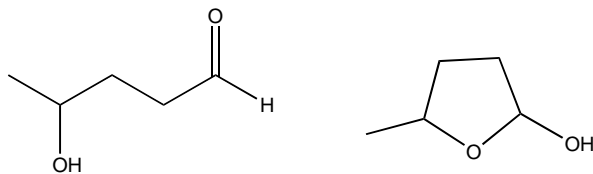
11. (5 points) Which of the following is/are aldose(s)? Circle any (or none) that apply.



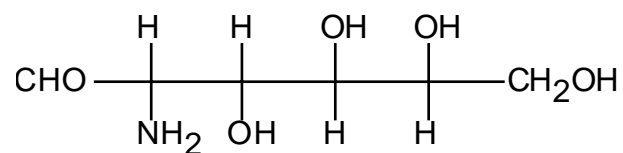
12. (5 points) Circle all of the stereocenters below (or write "none," if appropriate).



13. (5 points) Circle the more favored form of the following aldopentose in solution.



Questions 14 to 15 refer to the following molecule



14. (10 points) Draw one of the stable cyclic hemiacetals formed by the above molecule, paying attention to the stereochemistries of each atom.
15. (5 points) The above molecule is which type of sugar?
1) D-sugar 2) L-sugar
16. (2 points) What is the course number of this class?
1) 111 2) 250 3) 496 4) 728