

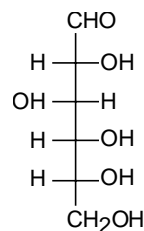
## Chem 250

## Extra Credit Quiz (Exam 2)

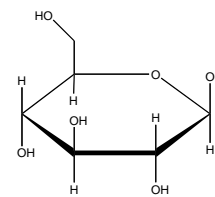
This exam is composed of **20** questions.

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.



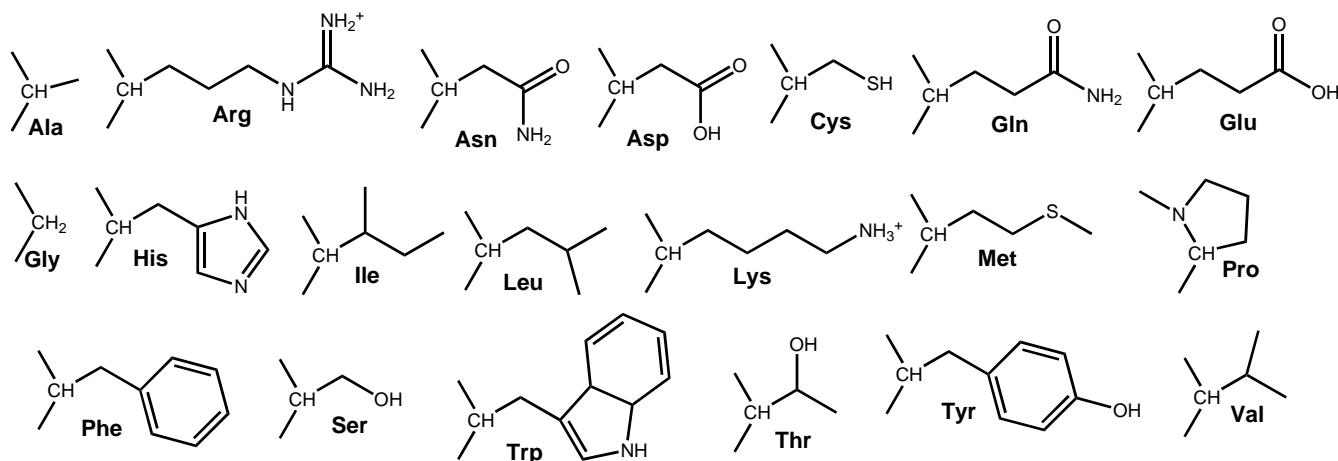
D-glucose

 $\beta$ -D-Glucose

\_\_\_\_\_  
Signature

## PERIODIC TABLE OF THE ELEMENTS

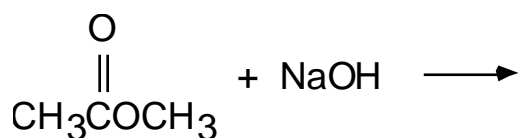
1A	2A	3B	4B	5B	6B	7B	8B	8B	8B	1B	2B	3A	4A	5A	6A	7A	8A
1 <b>H</b> 1.008																	2 <b>He</b> 4.003
3 <b>Li</b> 6.939	4 <b>Be</b> 9.012											5 <b>B</b> 10.81	6 <b>C</b> 12.01	7 <b>N</b> 14.01	8 <b>O</b> 16.00	9 <b>F</b> 19.00	10 <b>Ne</b> 20.18
11 <b>Na</b> 22.99	12 <b>Mg</b> 24.31								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



1. (5 points) Which listing below correctly orders the boiling points of the indicated molecules?

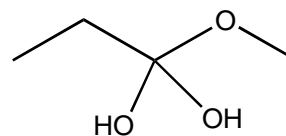
- 1) 1-butanol > propanoic acid > diethyl ether
- 2) diethyl ether > propanoic acid > 1-butanol
- 3) 1-butanol > diethyl ether > propanoic acid
- 4) propanoic acid > 1-butanol > diethyl ether
- 5) propanoic acid > diethyl ether > 1-butanol

2. (5 points) The products of the following reaction are:



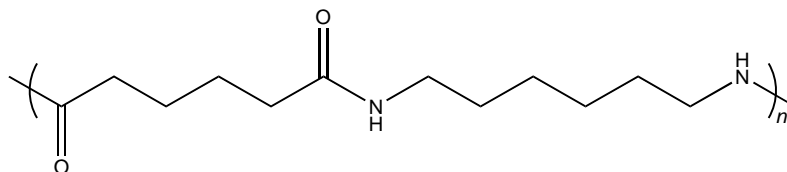
- 1) methanol and sodium formate
- 2) methanol and sodium acetate
- 3) sodium propanoate and water
- 4) sodium acetate and formaldehyde
- 5) none of the above

3. (5 points) Which two reactants would lead to the Fischer esterification reaction intermediate shown at right?



- 1) butanal and formic acid
- 2) butanoic acid and methanol
- 3) propanoic acid and methanol
- 4) 1-butanone and formic acid
- 5) none of the above

4. (5 points) Nylon-66, shown below, is an example of what kind of polymer?



- 1) polyester
- 2) polycarbonate
- 3) polyamide
- 4) polyacrylate



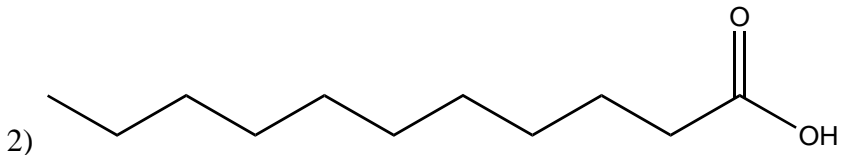
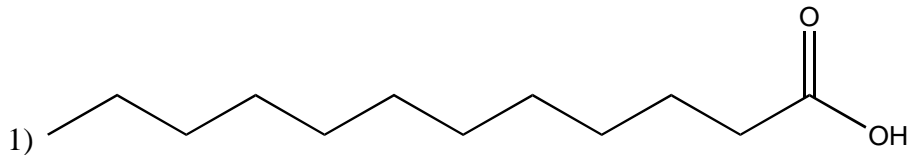
11. (5 points) The negatively charged molecule carbonylcyanide-*p*-trifluoromethoxyphenylhydrazone (FCCP) binds to  $H^+$  ions in the mitochondrial intermembrane space and transports them across the inner membrane to the matrix. FCCP thus is toxic because it:

- 1) prevents electron flow to dioxygen
- 2) leads to the build up of lactic acid
- 3) prevents synthesis of ATP via the proton translocating ATPase
- 4) leads to excess protonation of acetyl-CoA
- 5) inhibits phosphorylation of glucose

12. (5 points) Which listing below contains only hydrophobic amino acids?

- |                       |                       |
|-----------------------|-----------------------|
| 1) Ile, Leu, Val, Phe | 2) Met, Asn, Pro, Leu |
| 3) Arg, Glu, Asp, Lys | 4) Arg, Glu, Val, Phe |
| 5) Met, Asn, Asp, Lys |                       |

13. (5 points) Which fatty acid below is not of natural origin?



- 3) Neither are of natural origin
- 4) Both are of natural origin

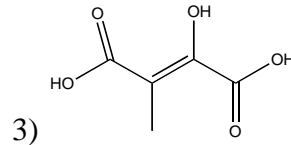
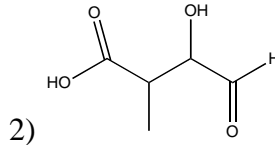
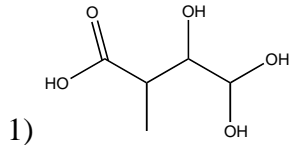
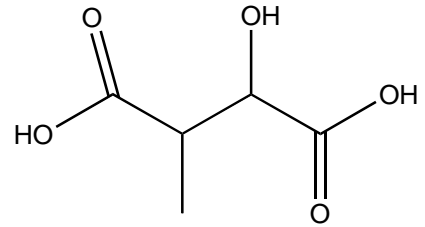
14. (5 points) ATP is often hydrolyzed in order to drive unfavorable reactions. Another important and very common role for ATP that does not involve hydrolysis is:

- |                                  |                                |
|----------------------------------|--------------------------------|
| 1) reduction of carboxylic acids | 2) oxidation of alcohols       |
| 3) phosphorylation of alcohols   | 4) oxidation of primary amines |
| 5) cyclization of sugars         |                                |

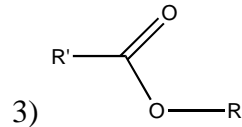
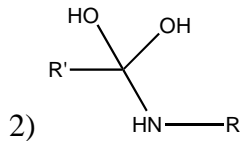
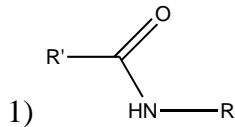
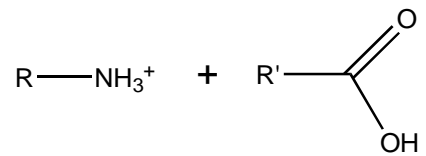
15. (5 points) What force is most dominant in driving a protein from an ensemble unfolded of states to a compact globular structure?

- 1) hydrophobic collapse  
 2) hydrogen bonding  
 3) disulfide bonding  
 4) formation of helices  
 5) electrostatic attraction between charged amino acid side chains

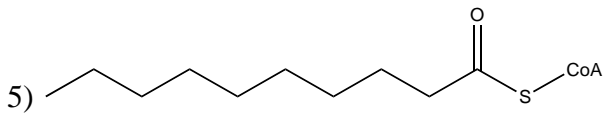
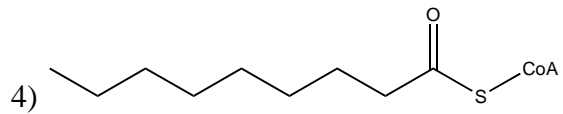
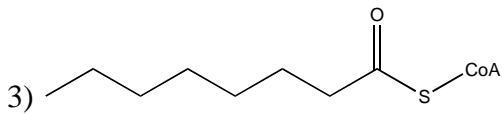
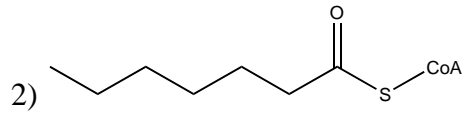
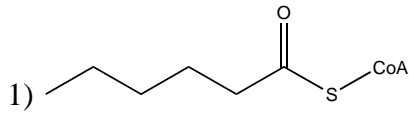
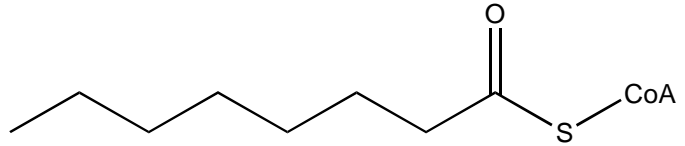
16. (5 points) In the Citric Acid cycle, which is a product of the reaction of malate (shown at right) with  $\text{NAD}^+$ ? (You are *not* expected to know this from memory)



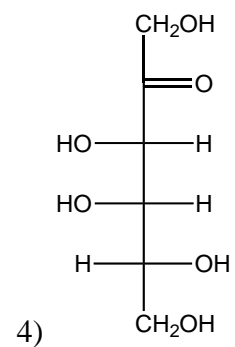
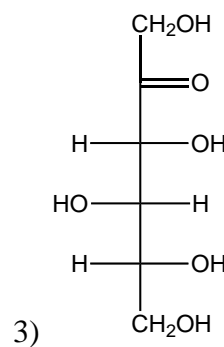
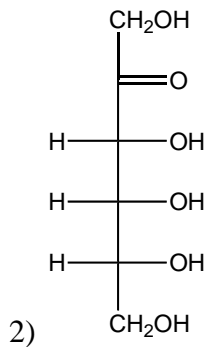
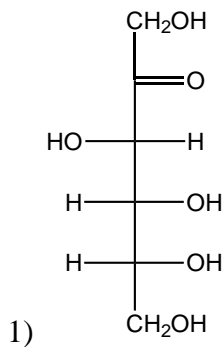
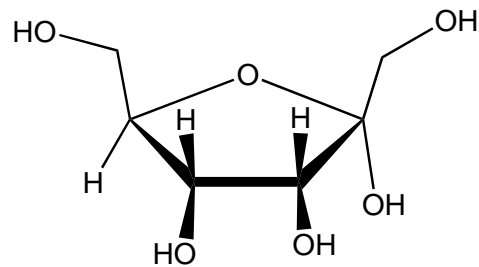
17. (5 points) Which is a stable product of the following reaction?



18. (5 points) For the fatty acid at right, which is the structure of the product resulting from one complete round of  $\beta$ -oxidation?



19. (5 points) Draw the Fischer projection corresponding to the linear form of the molecule shown at right.



20. (5 points) What is the course number of this class?

1) 111

2) 250

3) 496

4) 728