Chem 250 In-class Quiz #2

This quiz 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.

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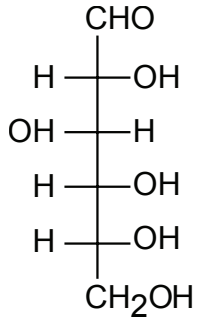
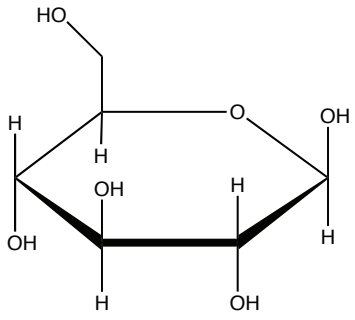
Signature

PERIODIC TABLE OF THE ELEMENTS

1A	2A	3B	4B	5B	6B	7B	8B	8B	8B	1B	2B	3A	4A	5A	6A	7A	8A
1 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)									

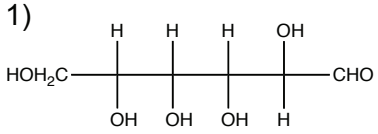


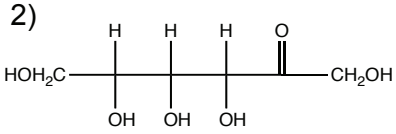
D-glucose

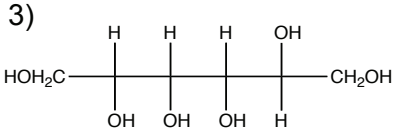


β-D-Glucose

For questions 1 to 3, consider the following (for each question, answer (4) if "none of the above" applies):

1) 

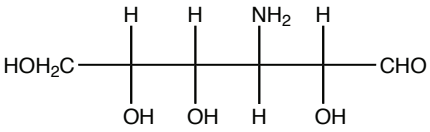
2) 

3) 

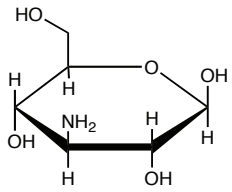
1. (5 points) Which of the above is a ketose sugar?

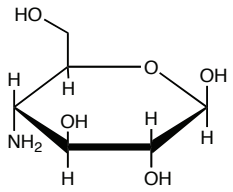
2. (5 points) Which of the above cyclizes to a sugar with a 5-membered ring?

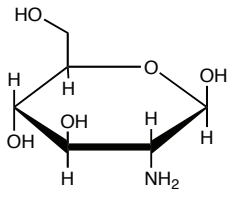
3. (5 points) Which of the above is incapable of forming a cyclic sugar?

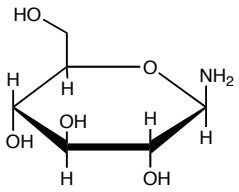
4. (5 points) Consider the following molecule 

Which of the following represents a cyclic form of this molecule (answer (5) for "none")?

1) 

2) 

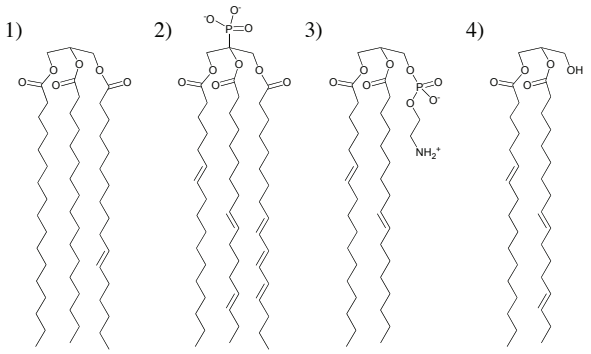
3) 

4) 

5. (5 points) In one complete cycle of the acyl carrier protein, how many carbons are added to the growing fatty acyl chain?

1) 1 2) 2 3) 3 4) 4 5) 8

For questions 6-7, consider the molecules at right (for each, answer (5) for "none"):



6. (5 points) Which is found in body fat?

7. (5 points) Which is found in a cell membrane?

8. (5 points) The reactions of gluconeogenesis are simply the reactions of glycolysis run in reverse

   1) True 2) False

9. (5 points) The functional group common to NADPH, ATP, and Coenzyme A is:

   1) triphosphate 2) triglyceride 3) testosterone 4) adenosine 5) nothing in common

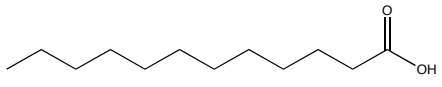
10. (5 points) In the Citric Acid cycle, succinate reacts with FAD. In this reaction, succinate:

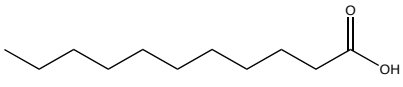
    1) isomerizes
    2) is phosphorylated
    3) is dephosphorylated
    4) is oxidized
    5) is reduced

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 fatty acid below is not of natural origin?

1) 

2) 

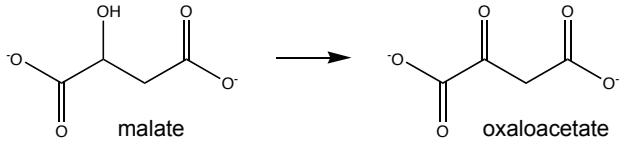
3) Neither are of natural origin

4) Both are of natural origin

13. (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) phosphorylation of alcohols
3) oxidation of alcohols
4) oxidation of primary amines
5) cyclization of sugars

14. (5 points) Which kind of enzyme catalyzes the following reaction in the Citric Acid cycle?

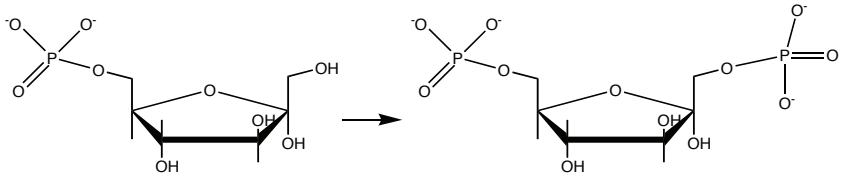


1) an isomerase 2) a dehydrogenase 3) a reductase 4) a kinase 5) none of these

15. (5 points) The above reaction requires another player. That player is most likely

1) NAD^+ 2) FADH 3) ATP 4) CoA-SH 5) none of these

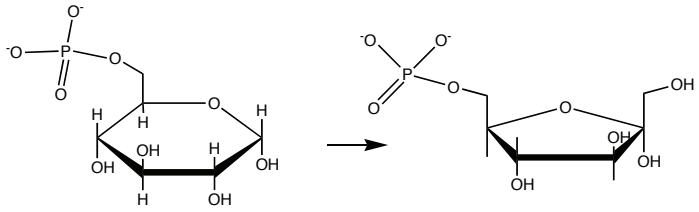
16. (5 points) The third step in glycolysis is the following



Which of the following enzymes catalyzes this reaction?

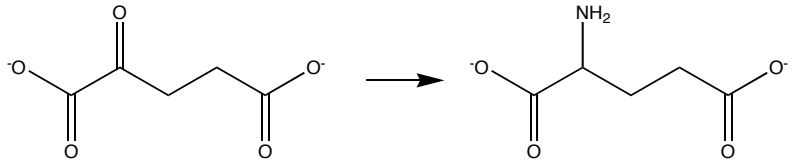
1) aldolase
2) phosphoglycerate mutase
3) pyruvate kinase
4) phosphofructokinase
5) phosphohexose isomerase

17. (5 points) The intermediates in the reaction below (the second step in glycolysis) contain what kind of functionalities?



1) ketone 2) aldehyde 3) both 4) neither

18. (5 points) We skipped "biosynthesis of amino acids" in Chptr 29, but given your knowledge of both organic and biochemistry, the following reaction likely requires what NH_4^+ and what other reagent?



1) ATP 2) NADH 3) NAD^+ 4) CoA-SH 5) none of these

19. (5 points) In transitioning from the glycolytic pathway to the Citric Acid Cycle, acetyl-CoA serves what purpose?

1) it acetylates glucose

2) it reduces NADH

3) it delivers a "two carbon chunk" for processing in the cycle

4)it carries electrons to the respiratory chain

5) it does nothing. Why do we need to know about it anyway?

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

1) 111 2) 250 3) 496 4) 728