Chemistry 211 Name: _____
Chapter 15 Quiz #1

1. Which of the following cannot be made by the reduction of a ketone or aldehyde with $NaBH_4$ in methanol?

   1) 1-butanol 2) 2-butanol
   3) 2-methyl-1-propanol 4) 2-methyl-2-propanol

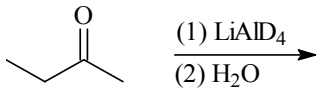
2. In general, the reduction of a ketone to an alcohol can be accomplished by all of the following except one. Which one will not reduce a ketone?

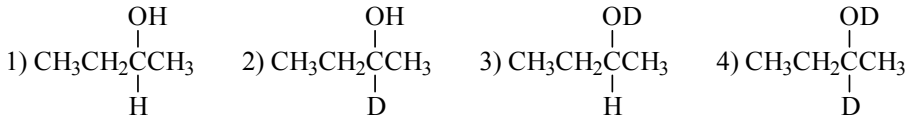
   1) $H_2/Pt$ 2) $HIO_4$ 3) $LiAlH_4$ 4) $NaBH_4$

3. Which of the following is not readily oxidized by $K_2Cr_2O_7$ in $H_2SO_4/H_2O$?

   1) n-butyl alcohol 2) *sec*-butyl alcohol
   3) isobutyl alcohol 4) *tert*-butyl alcohol

4. Give the product of the following reaction.




   1) 1 2) 2 3) 3 4) 4

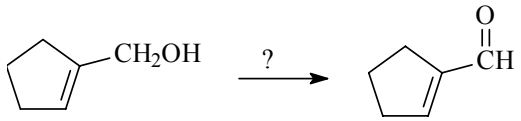
5. The reaction of a Grignard reagent with ethylene oxide followed by dilute acid gives:

   1) a primary alcohol 2) a secondary alcohol
   3) a tertiary alcohol 4) methanol

6. Consider the conversion of 1-butanol to each of the compounds shown below. In which conversion is an oxidizing agent needed?

   1) $CH_3CH_2CH{=}CH_2$ 2) $CH_3CH_2CH_2CH_2Br$
   3) $(CH_3CH_2CH_2CH_2)_2O$ 4) $CH_3CH_2CH_2CH{=}O$

7. Identify the reagent needed to carry out the following conversion.




   1) $K_2Cr_2O_7$, $H_2SO_4/H_2O$
   2) $PCC/CH_2Cl_2$
   3) $HIO_4$
   4) $OsO_4$, $(CH_3)_3COOH$, $(CH_3)_3COH$, $OH^-$

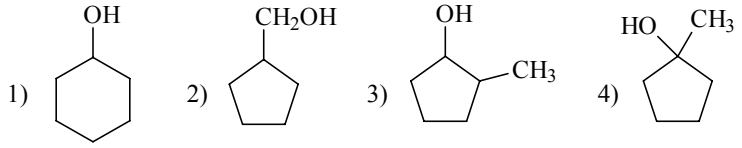
8. Consider the structure of the $AlH_4^-$ ion. The formal charge of Al is:

1) -1 2) 0 3) +1 4) +3

9. Which of the following best describes the role of the coenzyme $NAD^+$ (nicotinamide adenine dinucleotide) in biological chemistry?

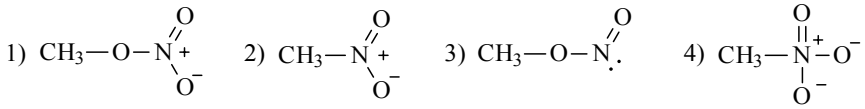
1) It reduces other species.
2) It oxidizes other species.
3) It catalyzes oxidation-reduction reactions.
4) It inhibits oxidation-reduction reactions.

10. Compound A, $C_6H_{12}O$, is readily oxidized with $K_2Cr_2O_7$ in $H_2SO_4/H_2O$ to give compound B, $C_6H_{10}O$. Compound B has four peaks in its C-13 NMR (broadband decoupling). Which one of the following fits the data for compund A?



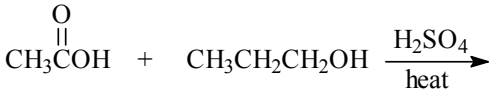

1) 1 2) 2 3) 3 4) 4

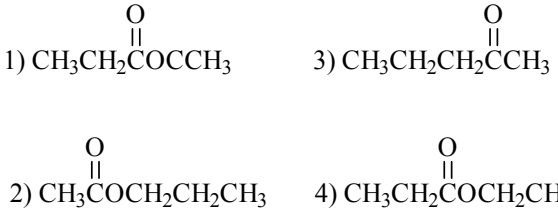
11. Which of the following is the ester formed between methanol and nitric acid, $HNO_3$?




1) 1 2) 2 3) 3 4) 4

12. What is the product of the reaction below?



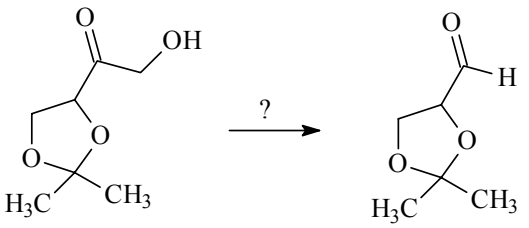




1) 1 2) 2 3) 3 4) 4

13. In which of the following forms does nicotinamide adenine dinucleotide have an aromatic pyridine ring?

1) NADH
2) $NAD^+$
3) both NADH and $NAD^+$
4) neither NADH or $NAD^+$

14. Which of the synthetic procedures below would carry out the following transformation?




1) $LiAlH_4$ followed by $H_2SO_4$/heat

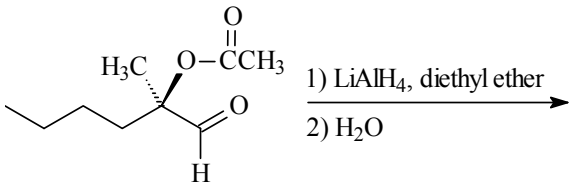
2) $O_3$ followed by $(CH_3)_2S$

3) $PCC/CH_2Cl_2$ followed by $HIO_4$

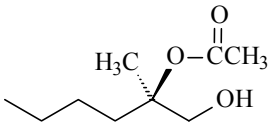
4) $NaBH_4$/methanol followed by $HIO_4$

1) 1 2) 2 3) 3 4) 4

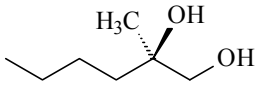
15. Which compound below is the product expected from the following reaction?



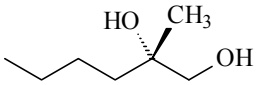

1)



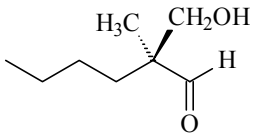

3)




2)




4)




1) 1 2) 2 3) 3 4) 4

Answer Key for Test "211c15q1.tst", 2/23/2004

| No. in Q-Bank | | No. on Test | Correct Answer |
|---|---|---|---|
| 15 | 1 | 1 | 4 |
| 15 | 3 | 2 | 2 |
| 15 | 5 | 3 | 4 |
| 15 | 7 | 4 | 2 |
| 15 | 9 | 5 | 1 |
| 15 | 11 | 6 | 4 |
| 15 | 13 | 7 | 2 |
| 15 | 15 | 8 | 1 |
| 15 | 17 | 9 | 2 |
| 15 | 19 | 10 | 1 |
| 15 | 21 | 11 | 1 |
| 15 | 23 | 12 | 2 |
| 15 | 25 | 13 | 2 |
| 15 | 27 | 14 | 4 |
| 15 | 29 | 15 | 3 |