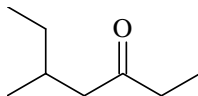
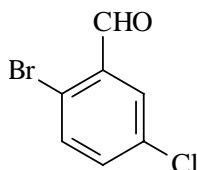


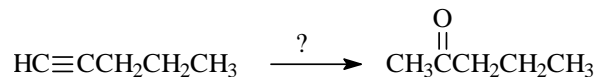
1. What is the IUPAC name of the following compound?



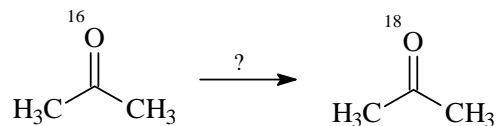
- 1) 3-methyl-5-heptanone 2) 5-ethyl-3-hexanone
3) 5-methyl-3-heptanone 4) 2-ethyl-4-hexanone
2. Which of the following is an acceptable IUPAC name for the compound below?



- 1) *o*-bromo-*m*-chlorobenzaldehyde 2) 6-bromo-3-chlorobenzaldehyde
3) 2-bromo-5-chlorobenzaldehyde 4) 1-bromo-4-chlorobenzaldehyde
3. The carbon-oxygen bond of an aldehyde is formed by overlap of which two orbitals?
- 1) $sp-sp$ 2) sp^2-sp^2 3) sp^2-2p 4) $2p-2p$
4. Identify the reagents needed to carry out the following conversion.



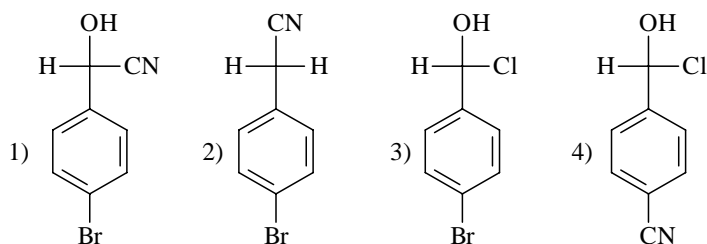
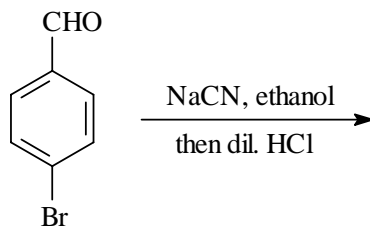
- 1) H_2 /Lindlar Pd followed by H_2SO_4/H_2O
2) O_3 followed by H_2O
3) H_2O , $HgSO_4/H_2SO_4$
4) $LiAlH_4$ followed by H_2O
5. Which of the following reagents would carry out the isotopic substitution reaction shown below?



- 1) $^{18}O_2/Ni$ (cat.) 2) $H_2^{18}O/HCl$ (cat.) 3) $Cr^{18}O_3/pyridine$ 4) $^{18}O_3$

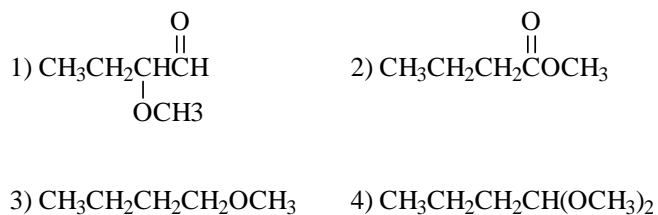
- 1) 1 2) 2 3) 3 4) 4

6. What is the product of the reaction below?



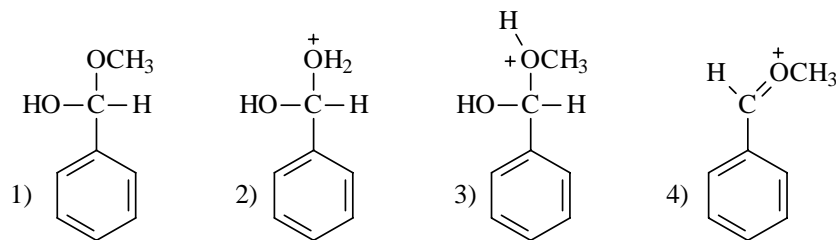
- 1) 1 2) 2 3) 3 4) 4

7. What is the product of the reaction of butanal with excess methanol and catalytic sulfuric acid?



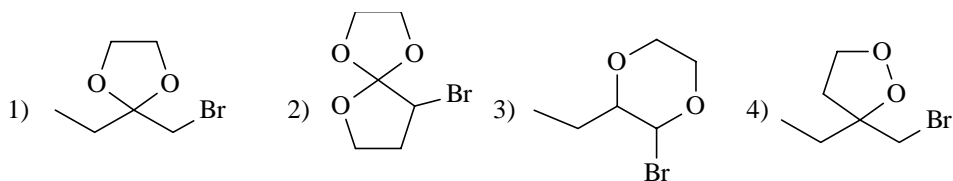
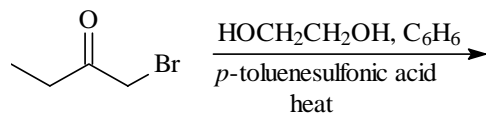
- 1) 1 2) 2 3) 3 4) 4

8. Which one of the following is not an intermediate in the acid-catalyzed reaction of benzaldehyde with 2 equivalents of methanol to give benzaldehyde dimethyl acetal?



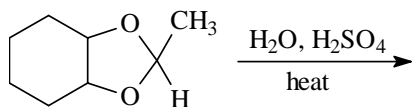
- 1) 1 2) 2 3) 3 4) 4

9. What is the product of the reaction shown?



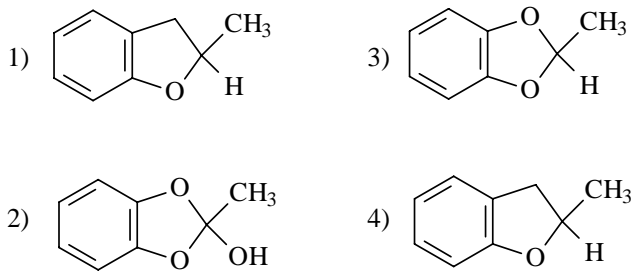
1) 1 2) 2 3) 3 4) 4

10. What are the products of the following reaction?



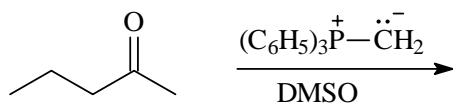
- 1) cyclohexanone and ethanol
- 2) cyclohexanone and ethanal
- 3) 1,2-cyclohexanediol and ethanal
- 4) 1,2-cyclohexanediol and ethanol

11. Which one of the following gives ethanal, $\text{CH}_3\text{CH}=\text{O}$, (as one of two products) when added to an aqueous solution of HCl ?

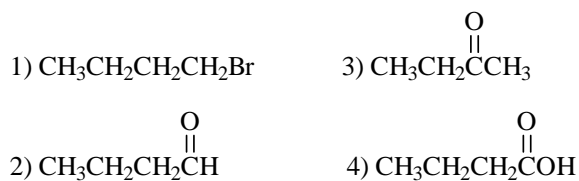


1) 1 2) 2 3) 3 4) 4

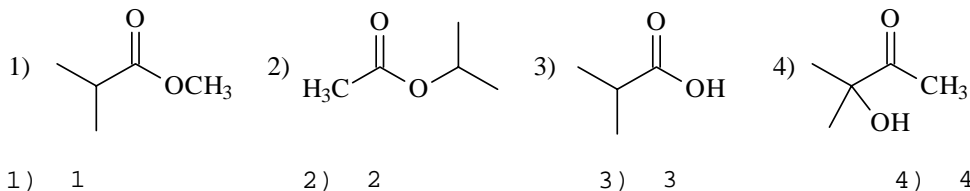
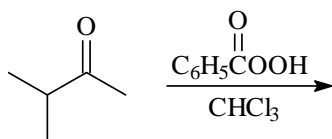
12. What is the product of the reaction below?



- 1) 2-methyl-1-pentene
 - 2) 2-methyl-2-propyloxirane
 - 3) 4-methyl-1-pentene
 - 4) 1-pentene
13. Which of the following reacts with $(\text{CH}_3\text{CH}_2)_2\text{NH}$ to give the compound shown below?

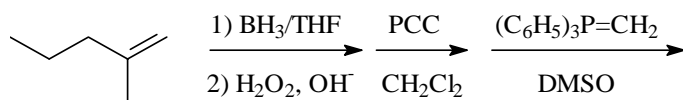


- 1) 1 2) 2 3) 3 4) 4
14. Baeyer-Villiger oxidation reactions can use peroxycarboxylic acids to convert ketones to:
- 1) carboxylic acids.
 - 2) esters.
 - 3) epoxides.
 - 4) -hydroxy ketones
15. What is the product of the following Baeyer-Villiger oxidation reaction?



16. Which of the following reacts with methylamine at the fastest rate?
- 1) 1-pentene
 - 2) pentanal
 - 3) 2-pentanone
 - 4) 3-pentanone

17. What is the product of the reaction sequence below?



- 1) 2-methyl-1-hexene
2) 2,3-dimethyl-2-pentene
3) 2-methyl-2-hexene
4) 3-methyl-1-hexene
18. Propose a mechanism which accounts for the formation of the cyclic compound below.

