CHEM 2324 Exam 3 Name:

April 17, 2018 UTEP ID #:

If required, the Exam 3 retake homework will be due Friday, April 20, before 5 pm through <http://organic.utep.edu/quiz>, no exceptions or excuses. Put your name on these sheets so that you can recover your class answers. Expect an email from me this evening.

1.-5. Match each reaction sequence to its final major product below. Assume any necessary workup. Answers may be repeated.

1. 2-methylpropanoic acid + thionyl chloride and pyridine catalysis followed by sodium 2-methylpropanoate
2. 2-methylpropanoic acid + ammonia and dicyclohexylcarbodiimide followed by thionyl chloride and heat
3. 2-methylpropanoic acid + 2-methylpropan-1-amine ((CH3)2CHCH2NH2)
4. 2-methylpropanoic acid + heat and acid catalysis followed by 2-methylpropan-1-ol and acid catalysis
5. 2-methylpropanoic acid + 2-methylpropan-1-ol and acid catalysis followed by 2-methylpropan-1-amine

a.  b.  c.  d.  e. not a.-d.

6.-10. Match each reaction to its final major product on the right. Assume any necessary workup. Answers may be repeated.

1. 2-methyl-N-(2-methylpropyl)propanamide +  a. 
2. 2-methylpropyl 2-methylpropanoate +  b. 
3. 2-methylpropanoic anhydride +  c. 
4. 2-methylpropanoyl chloride +  d. 
5. 2-chloropropane + magnesium followed by 2-methylpropanenitrile e. not a.-d.

11.-15. Match each reaction sequence to its final major product on the right. Assume any necessary workup. Answers may be repeated.

1. iodomethane + magnesium followed by propanone a. 
2. bromoethane + excess lithium followed by ethanal b. 
3. butanone + sodium borohydride c. 
4. butanal + lithium aluminum hydride d. 
5. 2-chloropropane + magnesium + carbon dioxide e. not a.-d.
6. What is the last intermediate in the reaction of propanone, methanol, acid catalysis and heat going to an enol ether? Charges are not shown.

a.  b.  c.  d.  e. 

17.-21. Match each reaction to its final major product on the right. Assume any necessary workup. Answers may be repeated.

1. propanone + methanamine a. 
2. ethanal + dimethylamine b. 
3. propanal + hydroxylamine c. 
4. propanone + hydrazine d. 
5. propanal + hydrogen cyanide and base catalysis e. not a.-d.

22.-26. Match the following structures to a functional group type. Answers may be repeated.

1.  23.  24.  25.  26. 

a. enol b. enolate c. enol ether d. hemiacetal e. not a.-d.

1. In the reaction of methyl ethanoate with methyl magnesium chloride, what compound is most electrophilic, which is the reason why the major product forms even with no excess of the Grignard reagent? Charges are not shown.

a.  b.  c.  d.  e. 

1. What is the major product of the reaction of 1-chloro-2-methylpropane, triphenylphosphine (Ph3P), n-butyllithium; and removal of lithium chloride before reacting with 2-methylpropanal? Assume any necessary workup.

a.  b.  c.  d.  e. not a.-d.

1. Which structure is an example of an ylide?

a.  b.  c.  d.  e. not a.-d.

1. What is the major product of the reaction of dimethylamine, propanone, sodium cyanoborohydride and trifluoroethanoic acid? Assume any necessary workup. Charges are not shown.

a.  b.  c.  d.  e. not a.-d.

***Do not forget to put your name, and ID on your scantron, and your name and ID on your exam sheets. Show a picture ID as you turn in you turn everything in.***