CHEM 2324 Exam 3 Name:

July 2, 2019 UTEP ID #:

If required, the exam retake homework will be due Friday, July 5, 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 structure on the left to the best functional group name on the right. Answers may be repeated.

1.  a. cyanohydrin
2.  b. enamine
3.  c. hemiaminal
4.  d. hydrazone
5.  e. imine

6.-10. Match each structure on the left to the best functional group name on the right. Answers may be repeated.

1.  a. amide
2.  b. ammonium carboxylate
3.  c. carbodiimide
4.  d. nitrile
5.  e. oxime

11.-15. Match each structure on the left to the best functional group name on the right. Answers may be repeated.

1.  a. acetal
2.  b.enol
3.  c. enol ether
4.  d. hemiacetal
5.  e. hydrate

16.-20. Match each set of reagents to a product to the right. Answers may be repeated. Assume any necessary workup.

1. ammonium ethanoate + heat a. 
2. ethanamide + SOCl2/heat b. 
3. ethanoic acid + ethanol (acid catalysis) c. 
4. ethanoic acid + heat (acid catalysis) d. 
5. ethanoic acid + SOCl2 (pyridine catalysis) e. not a.-d.

21.-25. Match each set of reagents to a product to the right. Answers may be repeated. Assume any necessary workup.

1. butanoyl chloride + (2(CH3I + 2 Li)+CuI) followed by (CH3I + Mg) a. 
2. ethyl ethanoate + 2(CH3CH2Br + Mg) b. 
3. hexanenitrile + H2/Pd c. 
4. lithium 4-methylpentanoate + LiAlH4 d. 
5. N-methylbutanamide + ((CH3)2CHCH2)2AlH + (CH3CH2Cl + Mg) e. not a.-d.
6. What are the best reagents and conditions to make (*Z*)-3-methylpent-2-ene via the Wittig reaction (alkyl halide + triphenylphosphine + base + remove or keep salt byproduct + carbonyl compound – triphenylphosphine oxide)?

a. , butanone, remove salt b. , butanone, keep salt

c. , ethanal, remove salt d. , ethanal, keep salt e. not a.-d.

1. Which is not an intermediate or product of the following reactions?

ethanoic acid + CH3NH2 + DCC, LiAlH4, propanone, NaBH3CN + CF3CO2H

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

***Put your name and ID on your scantron and exam sheets. Show a picture ID as you turn everything in.***