**CHM 257 Spring 2014 Exam III crib**

1. Show the carbocation intermediate(s) formed here, with all reasonable resonance structures: **4 pts**

2 pts 2 pts

any incorrect structures: -0.5 pts each

2. Give the substitution product(s) for this reaction:  **3 pts**

2 pts 1 pt

additional wrong ones: -0.5

3. Circle the compound(s) below that are aromatic: **6 pts**



no YES no YES no no

4. Show all the reasonable resonance structures for this molecule:  **2 pts**

2 pts any incorrect additional structures: - 0.5 pts each

NOTE: atoms cannot be in different positions!

5. Show the mechanism of this reaction: **6 pts**

2 pts for 2 arrows 3 pts for 3 arrows

1 pt for hydronium ion

Plus missing: - 0.5 pts everything else correct but E1 instead of E2: - 2 pts

6. Give a correct name for this molecule: **2 pts**

*trans-4-phenyl-2-pentene if no trans or E: - 1 pt; if cis or Z: - 0.5 pts*

*incorrect group or number: - 0.5 pts each*

7. Give a correct name for this molecule: **2 pts**

benzyl ethyl ether or benzyloxyethane or ethoxyphenylmethane

if only ethoxy or benzyl correct: 1 pt; ethoxytoluene: 1.5 pts; ethoxybenzyl: 1 pt

8. Give a correct name for this molecule: **2 pts**

3,5-diaminobenzaldehyde

*Any incorrect other substituent or incorrect number: - 0.5 pts each*

9. Draw the structure of this molecule: 3-isopropylbenzoic acid **2 pts**

*Any incorrect other substituent or incorrect number: - 0.5 pts each*

10. Draw the structure of this molecule: **4 pts**

*Any incorrect other substituent or incorrect number: - 0.5 pts each*

*Each incorrect stereocenter: - 0.5 pts each*

*No stereochemistry indicated: - 1 pt each*

11. Why is acid catalysis needed in many reactions of alcohols? **2 pts**

*To convert OH into a good leaving group*

*Any incorrect statements: - 0.5 pts each*

12. Give the organic product(s) of this reaction: **2 pts**

Ok if nitration is shown on several carbons

Any additional incorrect structures: - 0.5 pts each

incorrect bonding in NO2: - 0.5 pts; if aniline: 0 pts

13. Show the oxidation product(s) of this compound: **2 pts**

 2 pts each incorrect structure: - 0.5 pts

14. Draw the structure of this compound: **4 pts**

No stereochem: - 1 pt; wrong stereochem: - 0.5 pts

Each missing substituent or wrong location: - 0.5 pts each

Cyclo: - 1 pt

15. Circle the compounds that are resonance stabilized: **6 pts**

YES no YES YES YES no

16. Give the most likely product of this reaction: **3 pts**

Double bond in alkyl chain: 1 pt

any incorrect structure: - 0.5 pts each

Double bond in ring next to propyl: 3 pts

17. Identify each molecule shown below as an electrophile (E), nucleophile (N) or both (EN): **6 pts**



N E N E N E

Extra Credit: 18. Show the mechanism and organic product for this reaction: **10 pts**



Arrow: 2 pts correct electrophile: 2 pts 2 arrows: 4 pts correct product: 2 pts