CHEM 2322 Exam 3 Name:

April 16, 2024 UTEP ID #:

If required, the Exam 3 retake homework will be due Friday, April 19, before noon 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. ***Put your name and ID on your scantron***. ***Assume any necessary excess reagent and workup for the following reactions***.

1. Which halogen is used for the following reaction? 

a. fluorine b. chlorine c. bromine d. iodine e. not a.-d.

2.-6. Match each reaction sequence to a possible product. Use the degree (primary, secondary, tertiary) of RX to help you determine the best answer. Answers may be repeated.

1.  a. 
2.  b. 
3.  c. 
4.  d. 
5.  e. not a.-d.
6. What is the major product? 

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

1. What is the major product? 

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

1. The phenyl group will be connected to which carbon in the final product?



1. What is the major product? 

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

11.-15. Match each reagent to how it reacts with . Y is from the reagent. Answers may be repeated.

1. Br2  12. HSCH3 13. NaBH4 14. NH2OH 15. (CH3)2Cu- Li+

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

1. Ignoring stereochemistry, what is the enthalpy difference of the second propagation step of 1,3,5-trimethylcyclohexane, chlorine, and light going to the major mono-chlorinated product?

Bond Disassociation Energies (kcal/mole) Selectivity Ratios

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | C-H | C-F | C-Cl | C-Br |  | X-X | H-X |  | 1° | 2° | 3° |
| 1° | 98 | 107 | 81 | 68 | F | 38 | 136 | F | 1 | 1.2 | 1.4 |
| 2° | 95 | 106 | 80 | 68 | Cl | 58 | 103 | Cl | 1 | 4 | 5 |
| 3° | 91 | 106 | 79 | 65 | Br | 46 | 88 | Br | 1 | 80 | 1700 |

a. -8 b. -22 c. -30 d. -58 e. not a.-d.

1. How many constitutional isomer products are formed? 

a. 3 b. 4 c. 5 d. 6 e. not a.-d.

1. What is the third intermediate of the following reaction?  (Sodium cations not shown.)

a.  b.  c.  d.  e. 

1. What is the product? 

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

1. If partially oxidized, polyvinyl alcohol (gel glue) can degrade by which mechanism? 

a. retro-Aldol b. de-Carboxylation c. retro-Claisen d. retro-Ene e. not a.-d.