# December 6, 2009 Test 4A Chemistry 104

**Student’s Name:**

|  |  |  |
| --- | --- | --- |
|  **Answer** | **Answer** | **Answer** |
| 1. **A**
 | 1. **A**
 | 1. **B**
 |
| 1. **B**
 | 1. **C**
 | 1. **A**
 |
| 1. **C**
 | 1. **D**
 | 1. **B**
 |
| 1. **A**
 | 1. **A**
 | 1. **A**
 |
| 1. **D**
 | 1. **C**
 | 1. **B**
 |
| 1. **A**
 | 1. **D**
 | 1. **B**
 |
| 1. **B, C**
 | 1. **B**
 | 1. **D**
 |
| 1. **C**
 | 1. **B**
 | 1. **B**
 |
| 1. **B**
 | 1. **D**
 | 1. **D**
 |
| 1. **D**
 | 1. **A**
 | 1. **A**
 |
| 1. **D**
 | 1. **C**
 | 1. **B**
 |
| 1. **A**
 |  |  |

**Short Answers**

1. (2 pts) Sketch and name a tertiary alcohol with 4-carbon atoms (show all atoms present).
2. (6pts) Draw the structure of the major organic product of each of the following reactions and name each one of them:

|  |  |  |
| --- | --- | --- |
| Reactants | Products | Name of product |
|  |   (ketone on carbon 2) | Butanone |
|  |  | 3-pentanol |
|  |  | Sodium pentanoate |

1. (2 pts) Draw the structure of 2-butanamine. Identify the chiral atom.



1. (2pts) In the following equation, identify the acid, base, conjugate acid, and conjugate base.

 

 acid\_\_\_\_\_HNO3\_\_\_\_\_\_\_\_ conjugate acid \_\_\_ CH3NH3 +\_\_\_\_\_\_

 base \_\_\_CH3NH2\_\_\_\_\_\_\_\_\_\_ conjugate base \_NO3¯\_\_\_\_\_\_\_\_\_\_\_\_

5. (3pts) Shown below is a Fisher projection of galactose.
 

|  |  |
| --- | --- |
| 1. Is the galactose structure shown above D or an L sugar?
 |  This is the D-isomer (-OH) is to the right. |
| 1. Draw the structure of the product formed when carbon-1 of galactose is oxidized by Benedict's solution.
 | The structure has an acid group (-COOH) on carbon-1. |