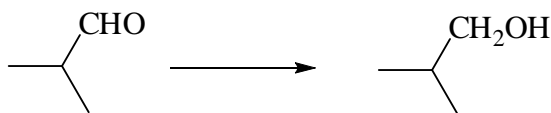


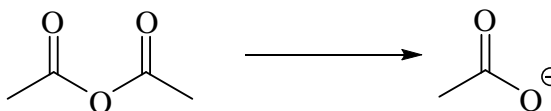
1. Which one of the following reagents would best effect the conversion shown?

- a)  $\text{CH}_3\text{MgBr}$  followed by  $\text{H}^+/\text{H}_2\text{O}$   
 b)  $\text{NaBH}_4$  followed by  $\text{H}^+/\text{H}_2\text{O}$   
 c)  $\text{Cr}_2\text{O}_7^{2-}/\text{H}^+$   
 d) hot conc.  $\text{H}_2\text{SO}_4$   
 e) hot dilute  $\text{OH}^-$



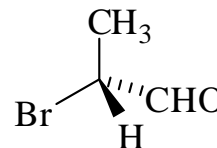
2. Which one of the following reagents would best effect the conversion shown?

- a) conc.  $\text{HCl}$   
 b) excess  $\text{NH}_3$   
 c)  $\text{SOCl}_2$   
 d)  $\text{H}^+/\text{H}_2\text{O}/\text{heat}$   
 e)  $\text{OH}^-/\text{H}_2\text{O}/\text{heat}$



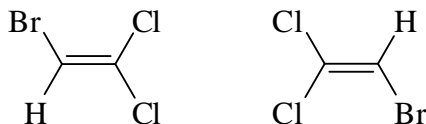
3. What is the order of priority (1<sup>st</sup> = highest) and the absolute configuration of the following compound?

- |    | 1 <sup>st</sup> | 2 <sup>nd</sup> | 3 <sup>rd</sup> | 4 <sup>th</sup> | Abs. Config. |
|----|-----------------|-----------------|-----------------|-----------------|--------------|
| a) | CHO             | CH <sub>3</sub> | Br              | H               | (S)          |
| b) | Br              | CH <sub>3</sub> | CHO             | H               | (R)          |
| c) | Br              | CHO             | CH <sub>3</sub> | H               | (S)          |
| d) | Br              | CHO             | CH <sub>3</sub> | H               | (R)          |
| e) | Br              | CH <sub>3</sub> | CHO             | H               | (S)          |



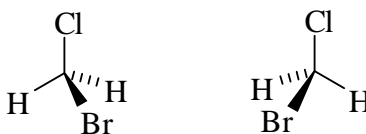
4. Which definition best describes the following pair of compounds?

- a) Enantiomers  
 b) Diastereomers  
 c) Constitutional isomers  
 d) Conformers  
 e) Same compound



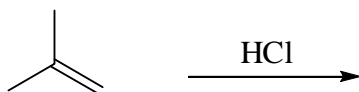
5. Which definition best describes the following pair of compounds?

- a) Enantiomers  
 b) Diastereomers  
 c) Constitutional isomers  
 d) Conformers  
 e) Same compound

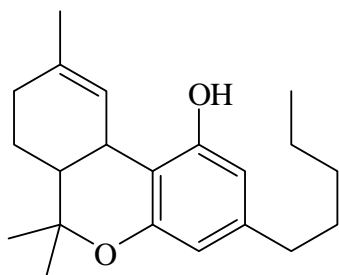


6. Which of the following terms best describes the product from the following reaction?

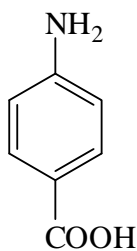
- a) (*R*)-enantiomer
- b) (*S*)-enantiomer
- c) racemic mixture
- d) achiral compound
- e) *meso*-compound



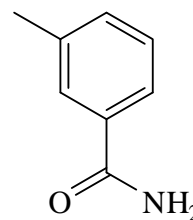
Questions 7 and 8 refer to the following molecules.



THC



PABA



*m*-toluamide

7. Which of the compounds will undergo an acid-base reaction with dilute HCl?

- a) THC only
- b) PABA only
- c) *m*-toluamide only
- d) PABA and *m*-toluamide only
- e) none of them

8. Which of the compounds will undergo an acid-base reaction with dilute NaOH?

- a) THC only
- b) PABA only
- c) *m*-toluamide only
- d) PABA and THC only
- e) all of them

9. Which of the following is **not** an example of a conjugate acid-base pair?

- a) HCN, CN<sup>-</sup>
- b) H<sub>3</sub>PO<sub>4</sub>, PO<sub>4</sub><sup>3-</sup>
- c) HClO<sub>3</sub>, ClO<sub>3</sub><sup>-</sup>
- d) H<sub>3</sub>O<sup>+</sup>, H<sub>2</sub>O
- e) HCO<sub>3</sub><sup>-</sup>, CO<sub>3</sub><sup>2-</sup>

10. What is the pH of a 0.20 M solution of boric acid? The p*K*<sub>a</sub> of boric acid is 9.24.

- a) 0.70
- b) 2.73
- c) 4.97
- d) 5.12
- e) 5.87

Correct answers: 1B, 2E, 3D, 4E, 5E, 6D, 7B, 8D, 9B, 10C

1. Which one of the following reagents would best effect the conversion shown?

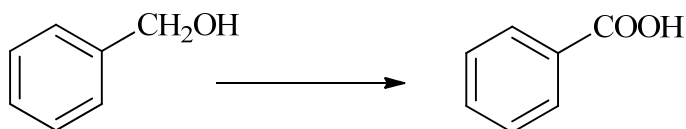
a)  $\text{H}_2$  / Pd catalyst

b)  $\text{NaBH}_4$  followed by  $\text{H}^+/\text{H}_2\text{O}$

c)  $\text{Cr}_2\text{O}_7^{2-}/\text{H}^+$

d) hot conc.  $\text{H}_2\text{SO}_4$

e) hot dilute  $\text{OH}^-$



2. Which one of the following reagents would best effect the conversion shown?

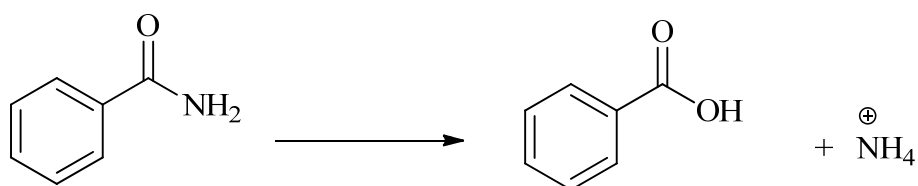
a) conc. HCl

b) excess  $\text{NH}_3$

c)  $\text{SOCl}_2$

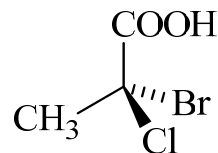
d)  $\text{H}^+/\text{H}_2\text{O}/\text{heat}$

e)  $\text{OH}^-/\text{H}_2\text{O}/\text{heat}$



3. What is the order of priority ( $1^{\text{st}}$  = highest) and the absolute configuration of the following compound?

- |    | $1^{\text{st}}$ | $2^{\text{nd}}$ | $3^{\text{rd}}$ | $4^{\text{th}}$ | Abs. Config. |
|----|-----------------|-----------------|-----------------|-----------------|--------------|
| a) | COOH            | $\text{CH}_3$   | Br              | Cl              | (S)          |
| b) | Br              | Cl              | COOH            | $\text{CH}_3$   | (S)          |
| c) | Cl              | Br              | $\text{CH}_3$   | COOH            | (R)          |
| d) | COOH            | Br              | Cl              | $\text{CH}_3$   | (R)          |
| e) | Br              | Cl              | COOH            | $\text{CH}_3$   | (R)          |



4. Which definition best describes the following pair of compounds?

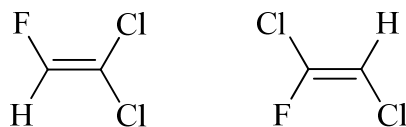
a) Enantiomers

b) Diastereomers

c) Constitutional isomers

d) Conformers

e) Same compound



5. Which definition best describes the following pair of compounds?

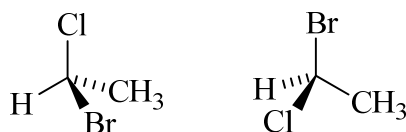
a) Enantiomers

b) Diastereomers

c) Constitutional isomers

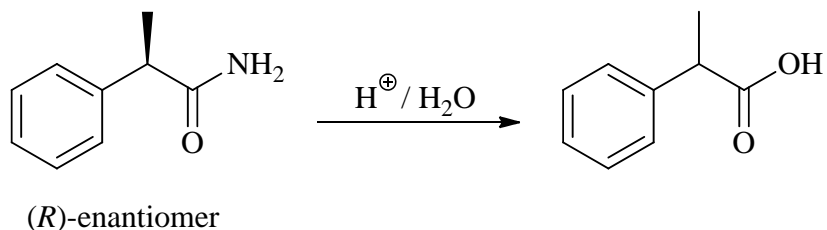
d) Conformers

e) Same compound

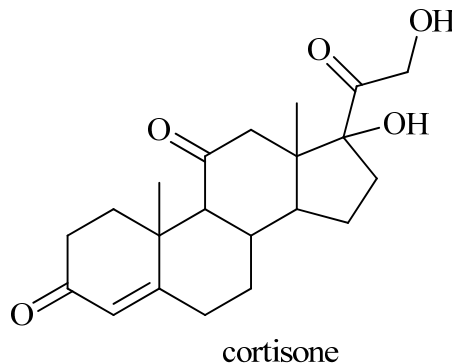
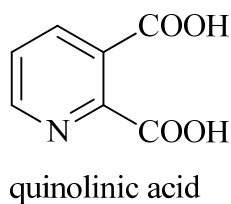
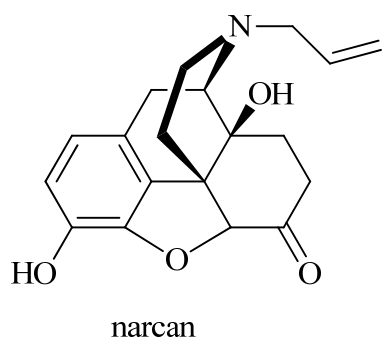


6. Which of the following terms best describes the product from the following reaction?

- a) (*R*)-enantiomer
- b) (*S*)-enantiomer
- c) racemic mixture
- d) achiral compound
- e) *meso*-compound



Questions 7 and 8 refer to the following molecules.



7. Which of the compounds will undergo an acid-base reaction with dilute HCl?

- a) narcarn only
- b) quinolinic acid only
- c) narcarn and quinolinic acid only
- d) none of them
- e) all of them

8. Which of the compounds will undergo an acid-base reaction with dilute NaOH?

- a) narcarn only
- b) cortisone only
- c) quinolinic acid only
- d) narcarn and quinolinic acid only
- e) all of them

9. Which of the following is **not** an example of a conjugate acid-base pair?

- a) HSO<sub>3</sub><sup>-</sup>, SO<sub>3</sub><sup>2-</sup>
- b) HCN, CN<sup>-</sup>
- c) H<sub>3</sub>PO<sub>4</sub>, H<sub>2</sub>PO<sub>4</sub><sup>-</sup>
- d) O, OH<sup>-</sup>
- e) H<sub>3</sub>O<sup>+</sup>, H<sub>2</sub>O

10. What is the pH of a 2.00 M solution of hydrazoic acid, HN<sub>3</sub>? The pK<sub>a</sub> of HN<sub>3</sub> is 4.65.

- a) -0.30
- b) 0.48
- c) 2.00
- d) 2.17
- e) 4.35

Correct answers: 1C, 2D, 3E, 4C, 5A, 6A, 7C, 8D, 9D, 10D  
Quiz (ii) needs checking.