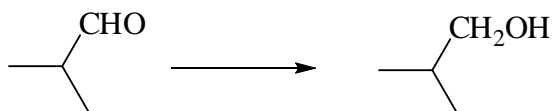


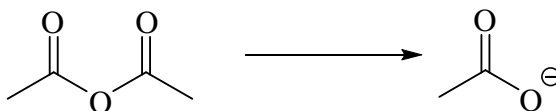
1. Which one of the following reagents would best effect the conversion shown?

- a) H_2 / Pd catalyst
 b) NaBH_4 followed by $\text{H}^+/\text{H}_2\text{O}$
 c) $\text{Cr}_2\text{O}_7^{2-}/\text{H}^+$
 d) hot conc. H_2SO_4
 e) hot dilute OH^-



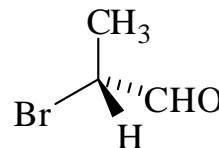
2. Which one of the following reagents would best effect the conversion shown?

- a) conc. HCl
 b) excess NH_3
 c) SOCl_2
 d) $\text{H}^+/\text{H}_2\text{O}/\text{heat}$
 e) $\text{OH}^-/\text{H}_2\text{O}/\text{heat}$



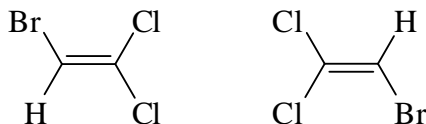
3. What is the order of priority (1st = highest) and the absolute configuration of the following compound?

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



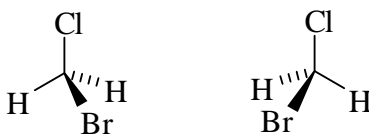
4. Which definition best describes the following pair of compounds?

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



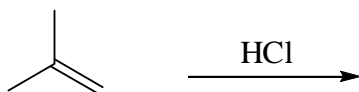
5. Which definition best describes the following pair of compounds?

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

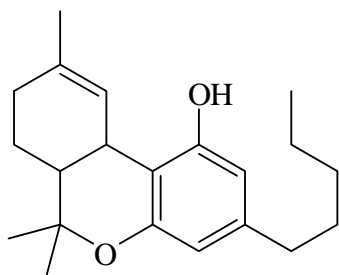


6. Which of the following terms best describes the product from the following reaction?

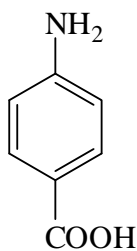
- a) (*R*)-enantiomer
- b) (*S*)-enantiomer
- c) racemic mixture
- d) achiral compound
- e) *meso*-compound



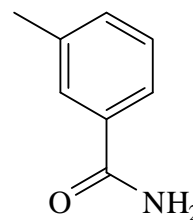
Questions 7 and 8 refer to the following molecules.



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⁻
- b) H₃PO₄, PO₄³⁻
- c) HClO₃, ClO₃⁻
- d) H₃O⁺, H₂O
- e) HCO₃⁻, CO₃²⁻

10. 3.00 mL of a 0.350 M solution of NaOH is diluted to 800 mL with water. What is the pH of the resulting solution?

- a) 2.88
- b) 10.70
- c) 10.88
- d) 11.12
- e) 12.50

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

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

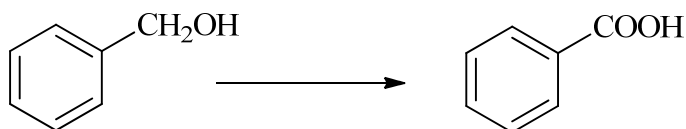
a) H_2 / Pd catalyst

b) NaBH_4 followed by $\text{H}^+/\text{H}_2\text{O}$

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

d) hot conc. H_2SO_4

e) hot dilute OH^-



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

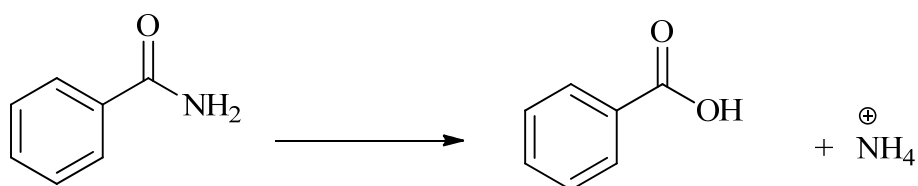
a) conc. HCl

b) excess NH_3

c) SOCl_2

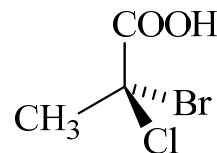
d) $\text{H}^+/\text{H}_2\text{O}/\text{heat}$

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



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

	1 st	2 nd	3 rd	4 th	Abs. Config.
a)	COOH	CH_3	Br	Cl	(S)
b)	Br	Cl	COOH	CH_3	(S)
c)	Cl	Br	CH_3	COOH	(R)
d)	COOH	Br	Cl	CH_3	(R)
e)	Br	Cl	COOH	CH_3	(R)



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

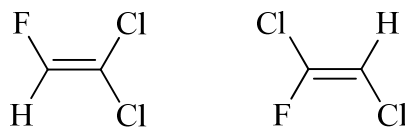
a) Enantiomers

b) Diastereomers

c) Constitutional isomers

d) Conformers

e) Same compound



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

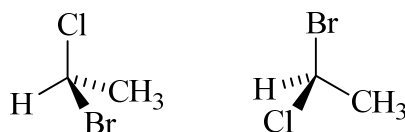
a) Enantiomers

b) Diastereomers

c) Constitutional isomers

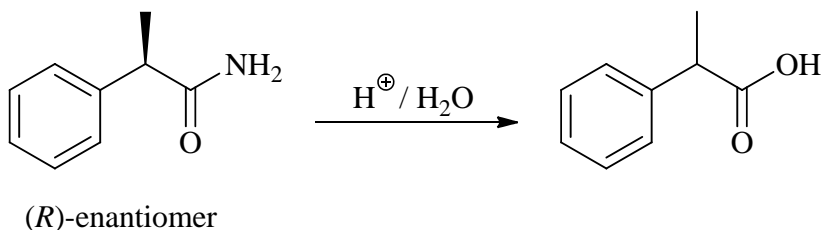
d) Conformers

e) Same compound

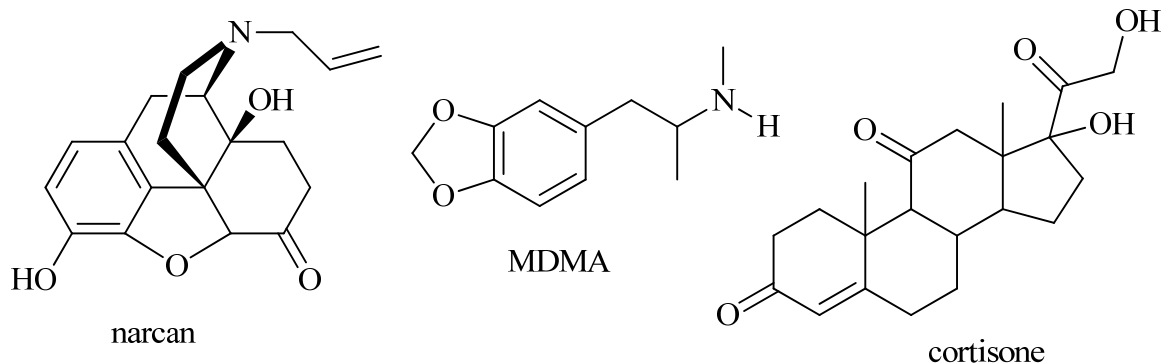


6. Which of the following terms best describes the product from the following reaction?

- 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) MDMA only
- c) narcarn and MDMA 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) MDMA only
- d) narcarn and cortisone only
- e) all of them

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

- a) HSO_3^- , SO_3^{2-}
- b) HCN, CN^-
- c) H_3PO_4 , H_2PO_4^-
- d) O, OH^-
- e) H_3O^+ , H_2O

10. 6.00 mL of a 0.320 M solution of HCl is diluted to 400 mL with water. What is the pH of the resulting solution?

- a) 2.32
- b) 2.82
- c) 4.66
- d) 7.66
- e) 11.68

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