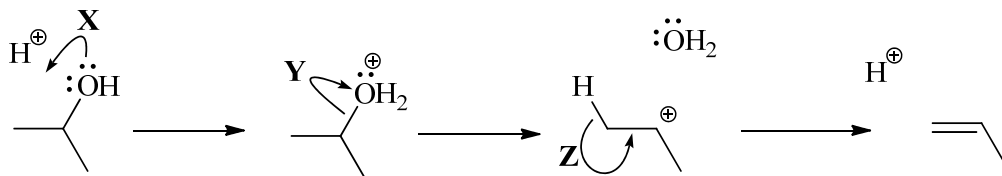


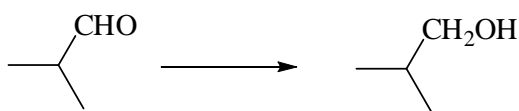
1. Which of the curly arrows are incorrectly drawn in the following reaction mechanism?

- a) **X** only
 b) **Y** only
 c) **Z** only
 d) all of them
 e) none of them#



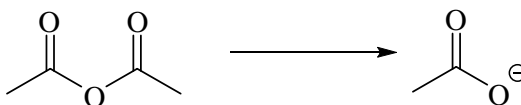
2. Which one of the following reagents would best effect the conversion shown?

- 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^-



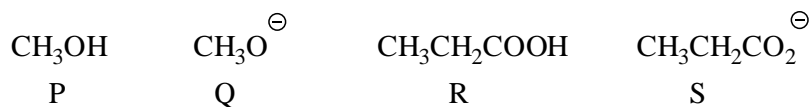
3. Which one of the following reagents would best effect the conversion shown?

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



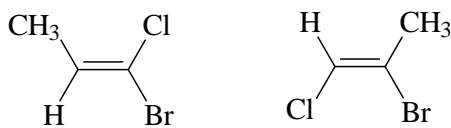
4. What are the major products from the hydrolysis of $\text{CH}_3\text{CH}_2\text{COOCH}_3$ with hot 6 M HCl?

- a) P and R
 b) P and S
 c) Q and R
 d) Q and S
 e) none of the above



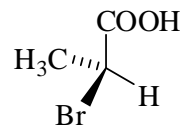
5. Which definition best describes the following pair of compounds?

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



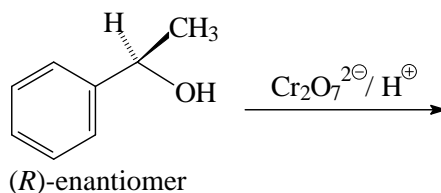
6. What is the order of priority (1st = highest) and the absolute configuration of the following compound?

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

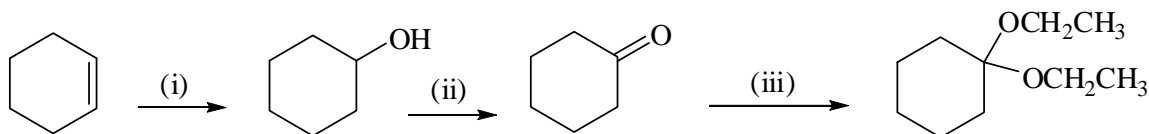


7. Which of the following terms best describes the product from the following reaction?

- (R)-enantiomer
- (S)-enantiomer
- racemic mixture
- achiral compound
- meso-compound

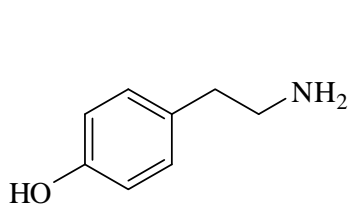


8. The reagents and reaction conditions to carry out the transformations below are:

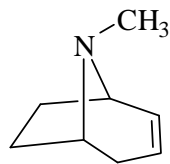


- (i) hot dilute H₂SO₄ (ii) Cr₂O₇²⁻/H⁺ (iii) excess ethanol/H⁺
- (i) hot dilute OH⁻/H₂O (ii) Cr₂O₇²⁻/H⁺ (iii) NaOCH₂CH₃ in ethanol
- (i) hot dilute H₂SO₄ (ii) OH⁻/H₂O (iii) excess ethanol
- (i) hot conc. H₂SO₄ (ii) LiAlH₄ followed by dilute acid (iii) NaOCH₂CH₃ in ethanol
- (i) hot dilute OH⁻/H₂O (ii) Cr₂O₇²⁻/H⁺ (iii) excess ethanol/H⁺

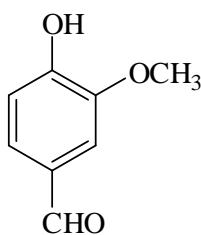
Q 9-10 refer to the following four molecules.



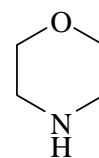
tyramine



tropidene



vanillin



morpholine

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

- tyramine and tropidene only
- tyramine, tropidene and morpholine only
- tyramine only
- tropidene only
- all of them

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

- tyramine and vanillin only
- tyramine, vanillin and morpholine only
- tyramine only
- vanillin only
- none of them

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