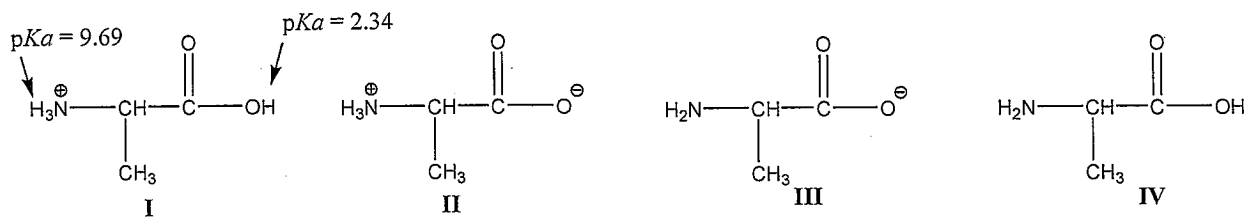


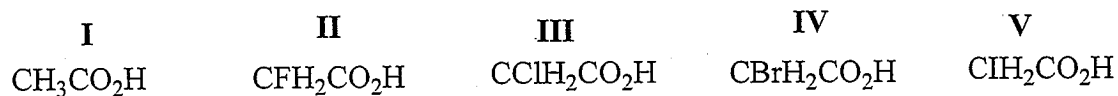
I. Multiple choice questions. Please put your answers on Scantron sheet. Your score will be graded based only on your answers from Scantron sheet. (10 questions, 30 points)

1. What will be the dominant structure of alanine (an amino acid) at pH = 7.3 (physiological pH)?



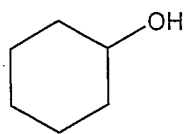
- (a) I
- (b) II
- (c) III
- (d) IV
- (e) None of the above

2. Arrange the following compounds in order of their acidity (from the most acidic to the least).

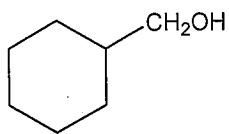


- (a) V>III>II>IV>I
- (b) II>III>IV>V>I
- (c) II>IV>III>V>I
- (d) II>V>III>IV>I
- (e) None of the above

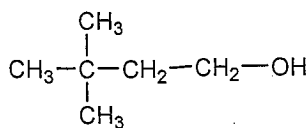
3. Which compounds belong to primary (1°) alkyl alcohols?



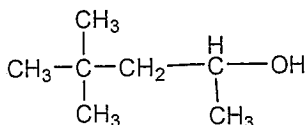
I



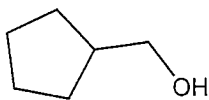
II



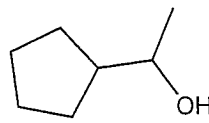
III



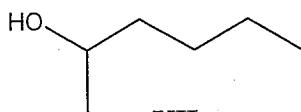
IV



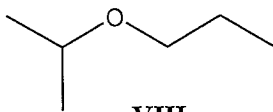
V



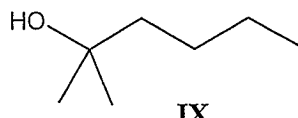
VI



VII



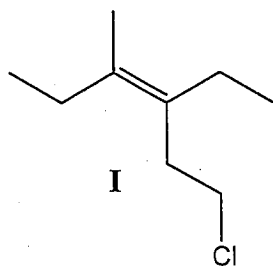
VIII



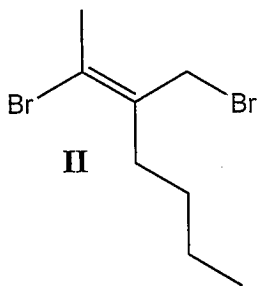
IX

- (a) I, III, V
- (b) II, III, V
- (c) III, VII, VIII
- (d) II, III, VII
- (e) None of the above

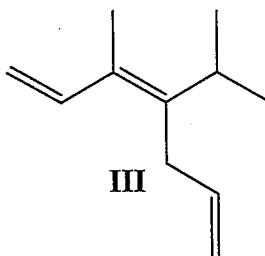
4. Which of the following compounds have Z configuration (carbon-carbon double bond)?



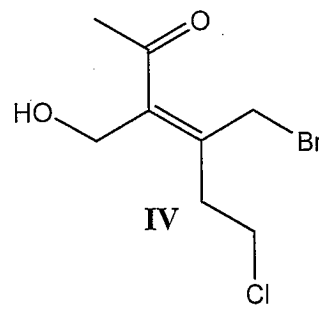
I



II



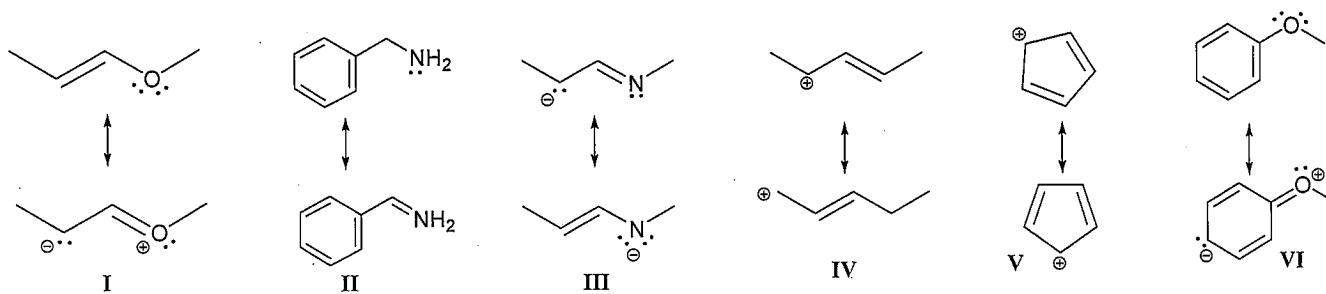
III



IV

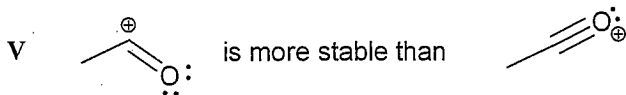
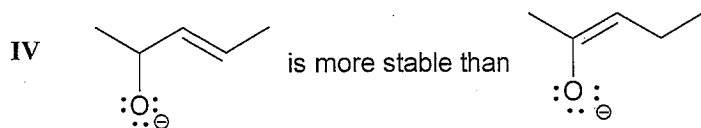
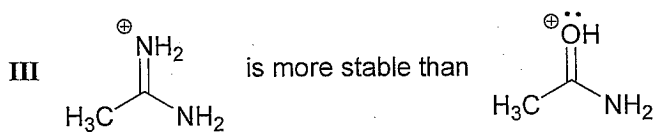
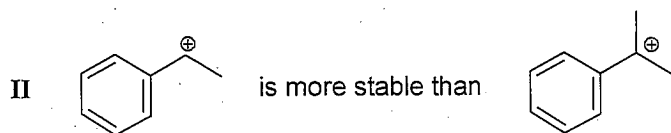
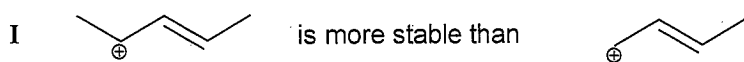
- (a) I, IV
- (b) I, II, III
- (c) I, III, IV
- (d) I, II, III, IV
- (e) None of the above

5. Which of the following are pairs of resonance structures?



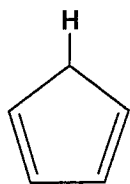
- (a) I, II, III, IV
- (b) I, III, V, VI
- (c) I, III, IV, V, VI
- (d) I, III, IV, V
- (e) None of the above

6. Which of the following statements are true?

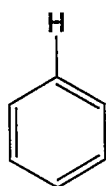


- (a) I, II, III
- (b) I, II, III, V
- (c) I, III, V
- (d) I, III
- (e) None of the above

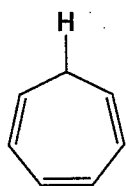
7. Which compound has the most acidic proton highlighted in bold?



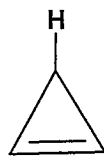
I



II



III

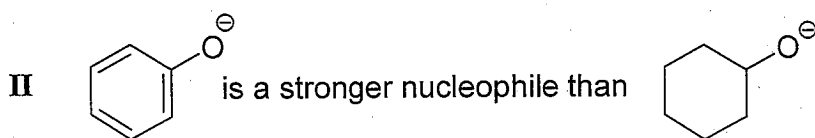


IV

- (a) I
- (b) II
- (c) III
- (d) IV
- (e) None of the above

8. Which of the following statements are true?

I H_2O is a stronger nucleophile than HO^-



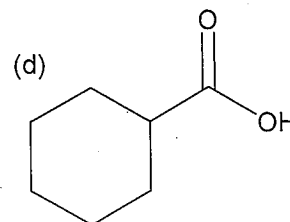
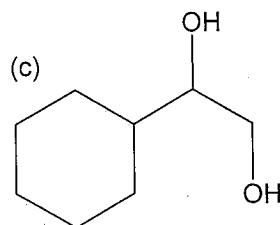
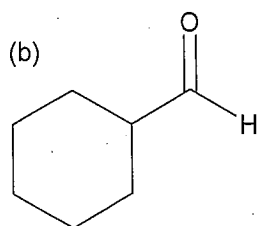
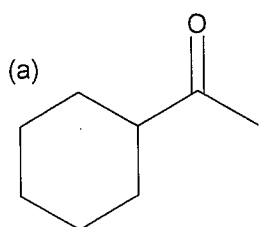
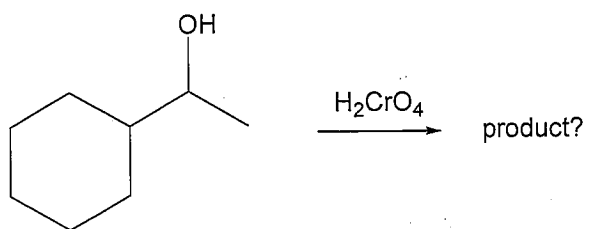
III H_2N^- is a stronger nucleophile than H_3N

IV $\text{CH}_3\text{CH}_2\text{O}^-$ is a stronger nucleophile than CH_3CO_2^-

V F^- is a stronger nucleophile than I^-

- (a) II, III, IV
- (b) II, III, V
- (c) III, IV
- (d) II, III, IV, V
- (e) None of the above

9. What could be the product for the following reaction?



(e) None of the above

10. Ethyl pentanoate gives apple its flavor. What should be used to prepare ethyl pentanoate?

- (a) pentanoic acid and ethanol
- (b) ethylene and pentanoic acid
- (c) ethanoic acid and 1-pentanol
- (d) ethylene and 1-pentanol
- (e) None of the above