1. What is the molecular formula of the following compound?
   a) C₉H₉NO
   b) C₉H₁₀NO
   c) C₁₀H₁₀NO
   d) C₁₀H₁₁NO
   e) C₁₀H₁₂NO

2. Which of the following is the correct stick representation of CH₃COCH₂OOCH₂C(CH₃)₃?

3. Which of the following stick representations is 5-ethyl-3,3-dimethylheptane?

4. What is the correct stick representation of (Z)-3-methyl-2-pentene?

5. What is the major product from the addition of HBr to 1-butene?

6. What is the correct name for the following compound?
   a) (E)-3,5-dimethyl-3-hexene
   b) (Z)-3,5-dimethyl-3-hexene
   c) (E)-2-ethyl-4-methyl-2-pentene
   d) (Z)-2-ethyl-4-methyl-2-pentene
   e) (Z)-2,4-dimethyl-3-hexene
7. Which term best describes the overall mechanism of the following reaction?
   a) Oxidation
   b) Reduction
   c) Elimination
   d) Nucleophilic Substitution
   e) Nucleophilic Addition

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

   a) (i) Zn/H⁺H₂O  (ii) NaOH  (iii) CH₃CH₂Br
   b) (i) dilute NaOH  (ii) conc. NaOH  (iii) CH₃CH₂Br
   c) (i) hot dilute NaOH  (ii) Na  (iii) CH₃CH₂OH
   d) (i) hot dilute NaOH  (ii) Na  (iii) CH₃CH₂Cl
   e) (i) hot conc. H₂SO₄  (ii) NaOH  (iii) NaOCH₂CH₃ in ethanol

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

   a) (i) hot conc. NaOH  (ii) I₂  (iii) NaOCH₃ in methanol
   b) (i) hot conc. H₂SO₄  (ii) HI  (iii) NaOCH₃ in methanol
   c) (i) hot dilute NaOH  (ii) I₂  (iii) CH₃OH
   d) (i) hot dilute NaOH  (ii) HI  (iii) CH₃OH
   e) (i) hot conc. H₂SO₄  (ii) I₂  (iii) CH₃OH

10. Which of the following compounds are aromatic?
    a) W, X, Y
    b) W, Y, Z
    c) V, X
    d) V, Z
    e) V, X, Z

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