

M.Phil/Ph.D. IN CHEMISTRY  
(MPHILCHEM/PHDCHEM)

Term-End Examination

December, 2018

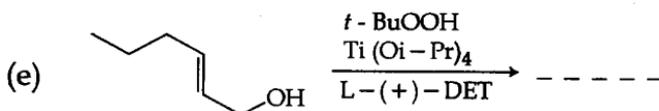
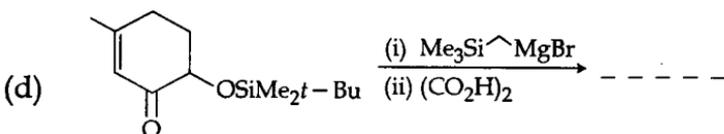
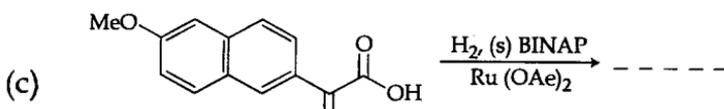
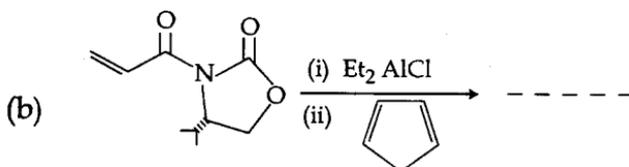
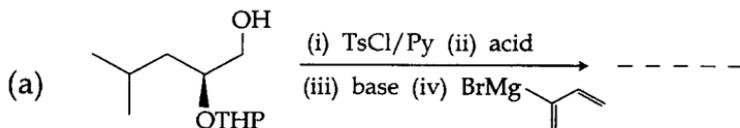
RCHE-001 : ADVANCES IN ORGANIC  
CHEMISTRY

Time : 3 hours

Maximum Marks : 100

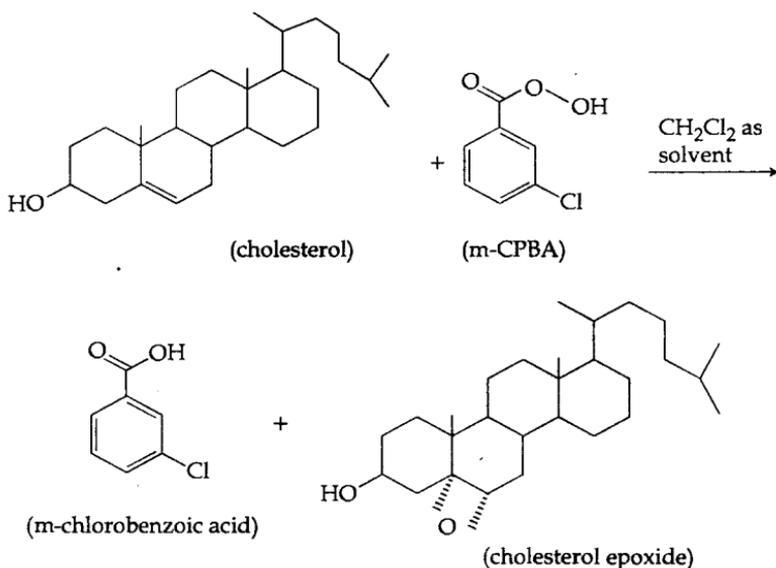
Note : Answer all the questions given below.

1. Complete the following reactions giving the product formed (indicating the stereochemistry) and the type of reaction taking place : 10



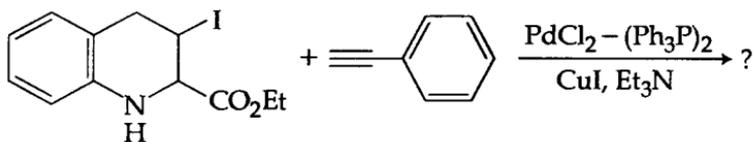
2. Give an example each of an amino acid, an amino alcohol, a carboxylic acid and a carbohydrate that are used for the asymmetric synthesis under the chiral pool strategy. State the disadvantages of this strategy. 10

3. Calculate the theoretical yield, observed yield and atom economy for the reaction between cholesterol and *m*-CPBA given below, if the weight of the starting material is 0.200 g. 10



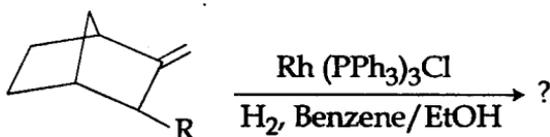
4. What is the mechanism of microwave heating? 10  
Write any two applications of microwave assisted organic synthesis giving the reactions and the conditions.

5. Write the product and give the mechanism of the following reaction : 10

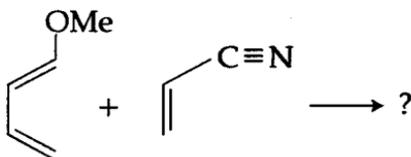


Write the name of the reaction.

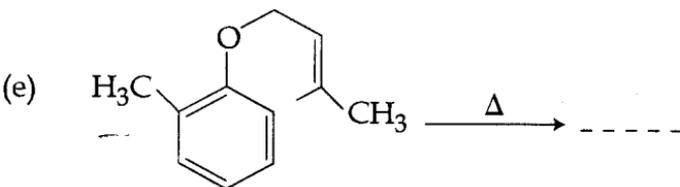
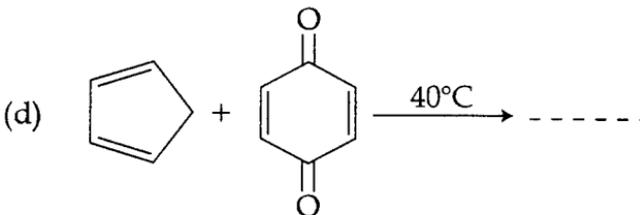
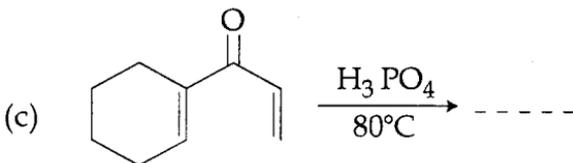
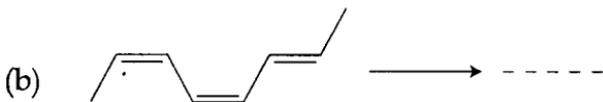
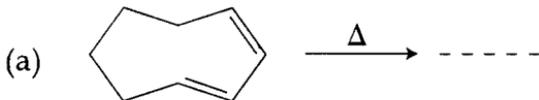
6. Write the product indicating the stereochemistry and give the mechanism of the following reaction : 10



7. Complete the following reaction. Give reasons for the regioselectivity observed in this reaction. 10



8. Complete the following reactions. (In the case of electrocyclic reaction, also mention about the types of rotation involved during the reaction). 10



9. What are the main interactions in supramolecules? Discuss in detail 10

10. What are zwitterions? Explain with the help of examples from biological systems. 10