

POSTGRADUATE FORTH SEMESTER EXAMINATION, 2022

CHEMISTRY

Course Code: CHEM 402E

Course ID: 41452

Organic Chemistry Special

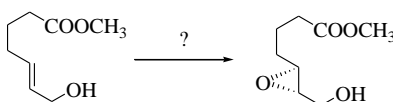
Time: 2 Hours

Full Marks: 40

*The figures in the margin indicate full marks**Candidates are required to give their answers in their own words as far as possible*1. Answer *any five* of the following questions:

2×5 = 10

a. Identify the missing reagent.

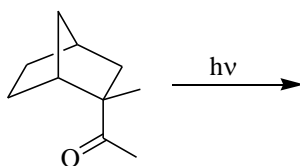


b. Explain diastereoselective reaction with one suitable example.

c. Write down the structure of β -cyclodextrin.

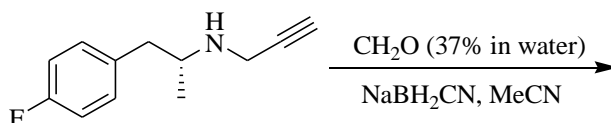
d. What do you mean by purple benzene? Give one use of purple benzene.

e. Complete the following reactions with suitable mechanism.



f. Give one example of a reduction of ketone with dissolving metals in absence of proton donor with probable mechanism.

g. Predict structure of the major organic product in the following reaction with plausible mechanism.

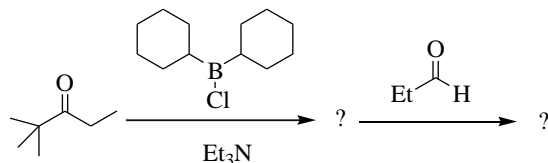


2. Answer *any four* of the following questions:

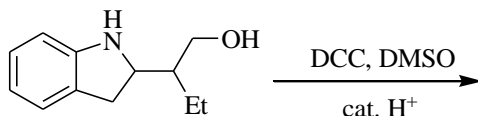
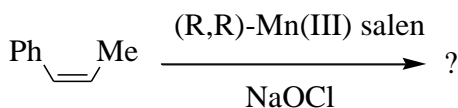
5×4 = 20

a. What is the difference between crown ethers and cryptands? How will you synthesize [2.2.2] cryptand and bis(1,4-phenylene)-34-crown 10-ether? 1+(2+2) = 5

b. Predict the major organic products in each of the following reactions and explain the stereochemical control involved by drawing the transition states. 5



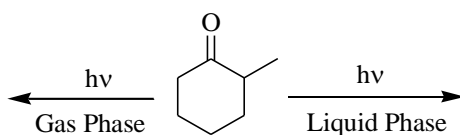
c. Draw the structure of the major organic product in each of the following reactions and justify your choice. Include stereochemistry where it is applicable.



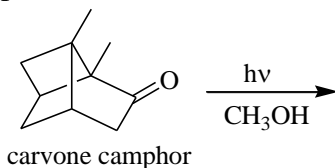
3+2 = 5

d. Complete the following reactions with mechanism.

2.5+2.5 = 5



e. i. What will the product of the reaction when carvone camphor is irradiated with UV light in the presence of MeOH? Provide a plausible mechanism.

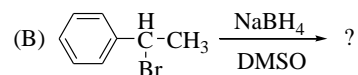
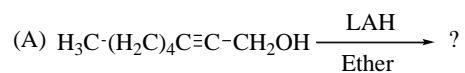


ii. Write the limitations of KMnO_4 oxidation.

(1+2)+2 = 5

f. i. Summarize the use of hydrazine and its derivative in effecting the reduction of various types of organic groups.

ii. Identify the missing products in each of the following reactions.

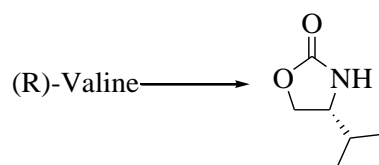


3+(1+1) = 5

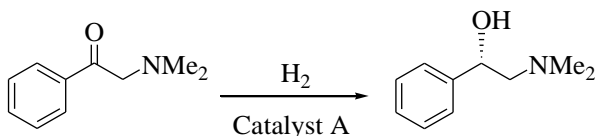
3. Answer *any one* of the following questions:

10×1 = 10

a. i. Synthesize:



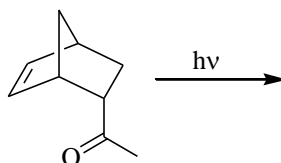
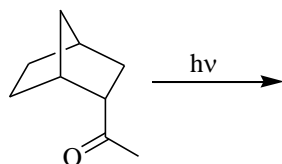
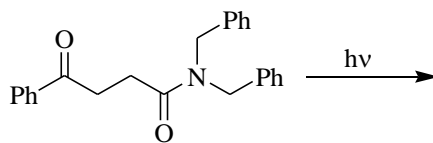
ii. Identify and draw the structure of the missing Catalyst A. How will you synthesize the catalyst A?



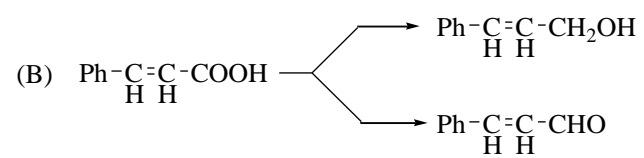
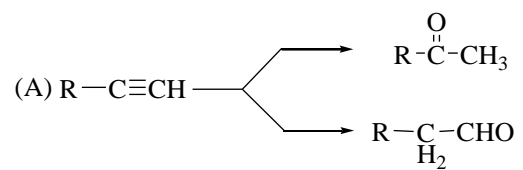
iii. Indicate four important properties of micelles. What is critical micelle concentration? Mention one method by which you can determine it.

2+(2+2)+(2+1+1) = 10

b. i. Complete the following reactions with mechanism:



ii. How would you carry out the following transformations?



6+4 = 10
