

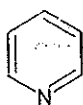
BACHELOR OF PHARMACY HONOURS - LEVEL 4 - 2020/21
 BSU4340- PHARMACEUTICAL CHEMISTRY III
 FINAL EXAMINATION

INDEX NO:

Part B –Answer all questions

(80 marks)

- 1.a) Explain why pyridine is less reactive towards electrophiles than benzene. (02 marks)
- b) Aryl amines/ N-substituted aryl amines do not undergo Friedel-Craft reactions. Explain. (02 marks)
- c) Would you expect 2-chloro-3-methylbutane to be a good alkylating agent in a Friedel-Crafts alkylation reaction? Explain your answer by providing a suitable mechanism. (03 marks)
- d) Which of the following compounds is more basic? Explain your answer. (03 marks)

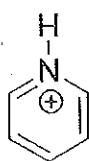


Pyridine

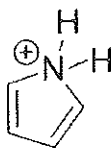


Pyrrolidine

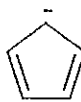
2. a) Assuming all the molecules given here are planar, deduce whether each of the following compounds is aromatic, anti-aromatic or non-aromatic by applying Hückel's rule. Provide reasons. (06 marks)



I)



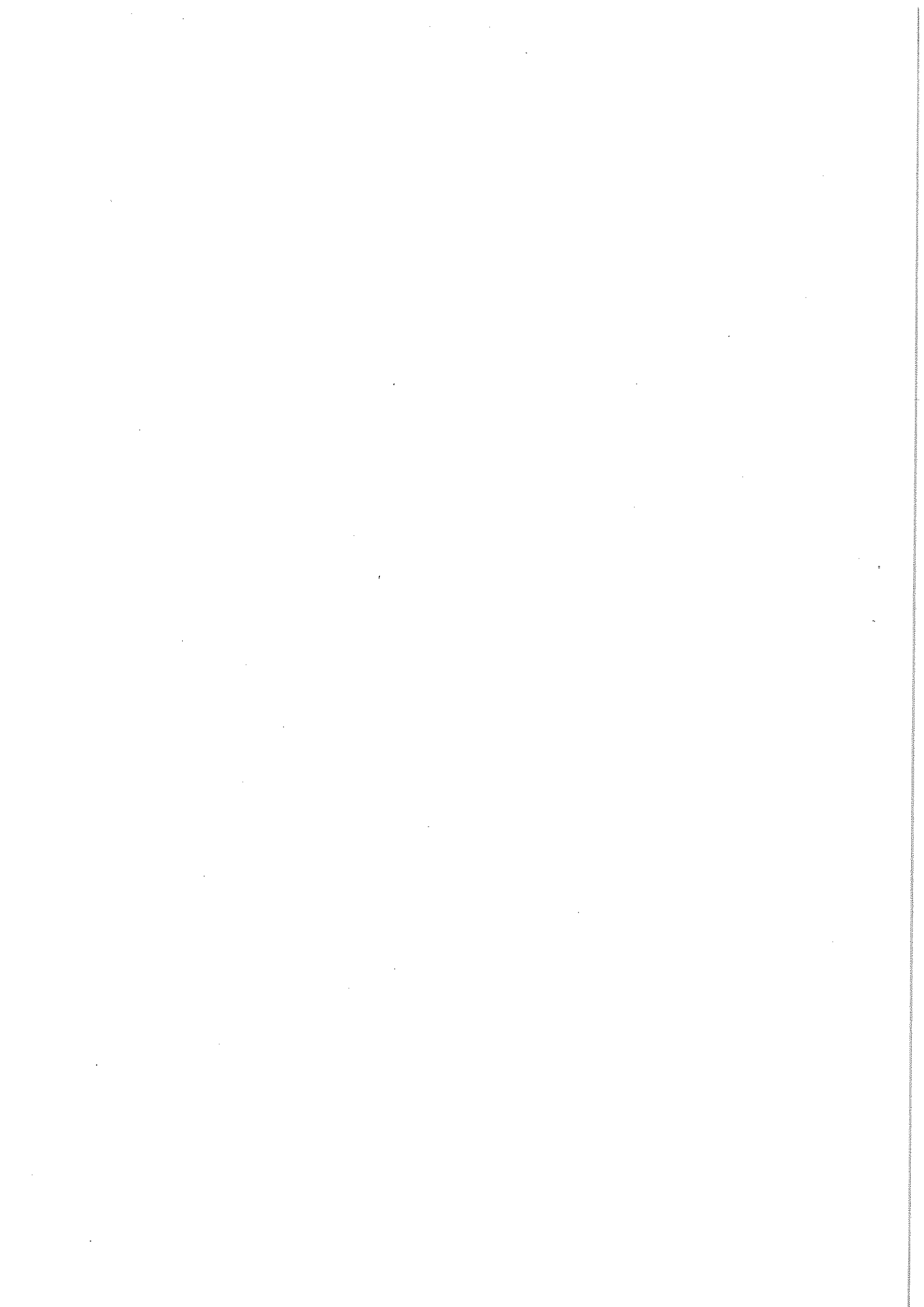
II)



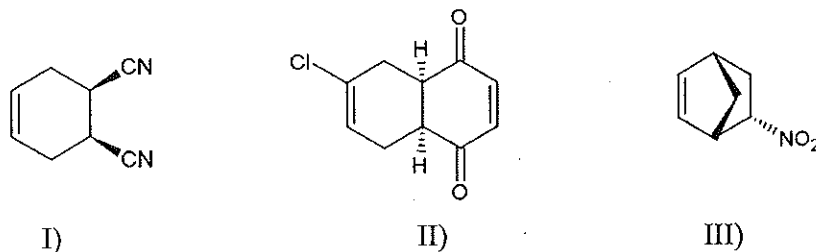
III)

- b) One of the isomeric, conjugated dienes (**M**) does not react with any dienophiles in Diels-Alder reaction. The molecular formula of **M** is C_6H_8 . Deduce the structure of **M**. (03 marks)

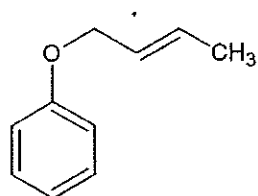




c) Identify dienes and dienophiles of the following Diels-Alder products. (06 marks)

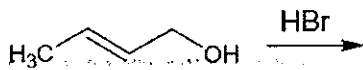


3. a) Providing a suitable mechanism, predict the product of Claisen rearrangement of *trans*-2-butenyl phenyl ether. (04 marks)

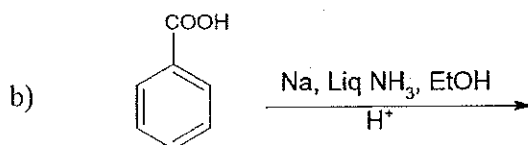
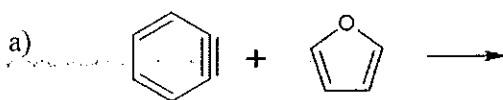


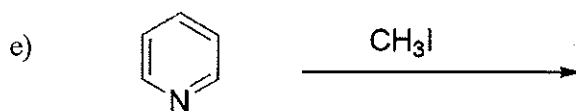
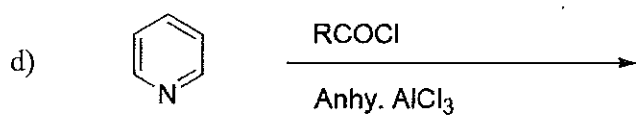
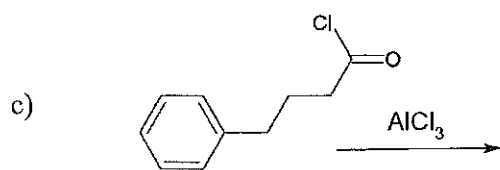
trans-2-butenyl phenyl ether

b) Indicating the mechanism, predict the products of the following reaction. Which product is more stable? Explain your answer. (08 marks)

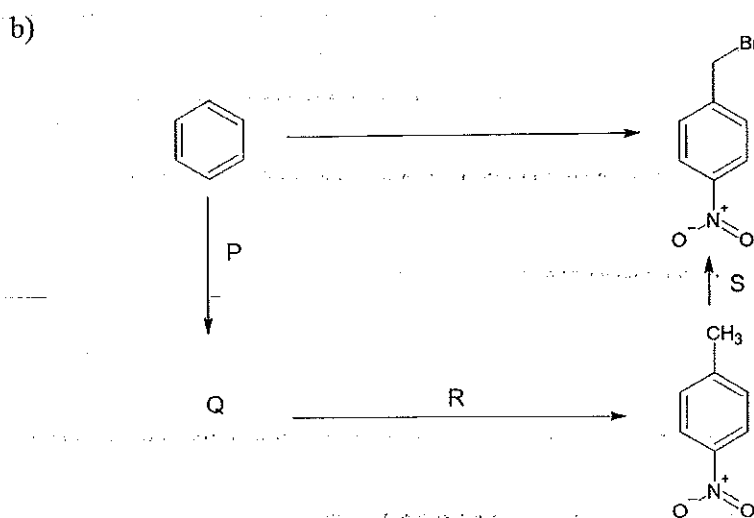
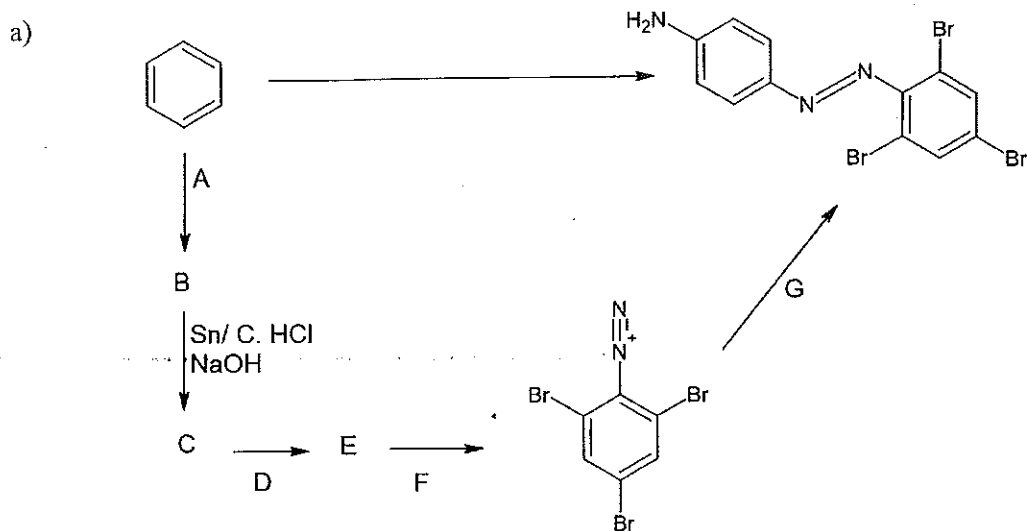


4. Give the structures of the major products of the following reactions. (10 marks)

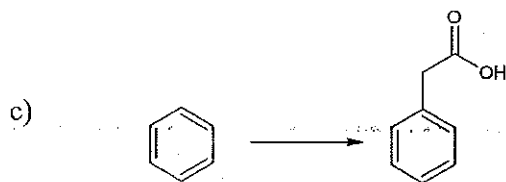
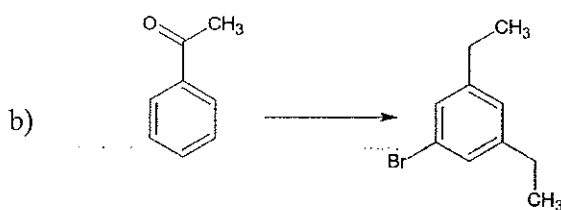
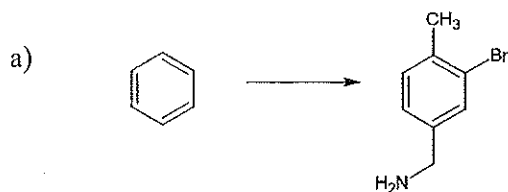




5. Complete the following reaction sequence giving structures of missing products, reagents, and conditions (A-G and P-S). (12 marks)



6. Giving necessary reagents and conditions, show how you would carry out the following multistep transformations. (21 marks)



END

