00018

THE OPEN UNIVERSITY OF SRI LANKA
FACULTY OF HEALTH SCIENCES
DEPARTMENT OF BASIC SCIENCES
ACADEMIC YEAR 2022/2023 – SEMESTER I

BACHELOR OF PHARMACY HONOURS
BSU4340-PHARMACEUTICALCHEMISTRY III-LEVEL 4
FINAL EXAMINATION
DURATION: 3 HOURS

DATE: 22nd MARCH 2023 **TIME: 09.30 a.m. – 12.30 p.m.**

IMPORTANT INSTRUCTIONS / INFORMATION TO CANDIDATES

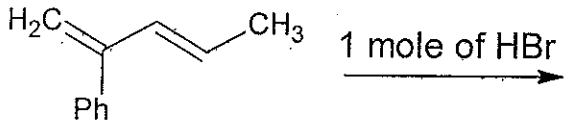
- This question paper consists of **04** pages containing **05** questions
- Write answers for all questions in booklets provided.
- Clearly state your **Index Number** in your answer script
- Having any unauthorized materials, mobile phones in your possession is a punishable offence

BACHELOR OF PHARMACY HONOURS - LEVEL 04 - 2022/23
BSU4340- PHARMACEUTICAL CHEMISTRY III
FINAL EXAMINATION

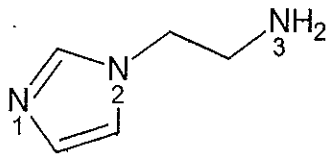
Answer all questions

1. a) Why pyridine is more reactive than benzene towards nucleophilic substitution reactions? (05 marks)
   b) Nucleophilic substitution at 2- and 4- positions of pyridine is most favoured. Explain. (05 marks)
   c) Explain why p-nitrophenol is more acidic than phenol (your answer should include resonance structures). (05 marks)
   d) What are the limitations of Friedel-Crafts reactions? (05 marks)

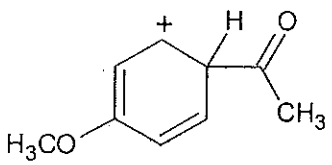
2. a) Draw the mechanism and predict the major products for the following reaction. (06 marks)



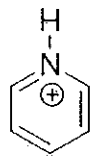
   b) Classify the hybridization of each of the N atoms (1, 2, and 3) and the hybridization of nitrogen's lone pair of the following structure. Explain which of the N atoms is showing highest basicity and the lowest basicity. (14 marks)



3. a) Draw all resonance structures for the following cation intermediate and circle the most stable structure. Use curved-arrows to indicate the movement of positive charge/electrons from one resonance structure to the next. (06 marks)

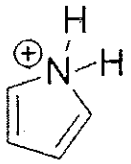


b) Providing reasons describe following structures as aromatic, anti-aromatic or non-aromatic. Assume all the molecules given here are planar. (14 marks)

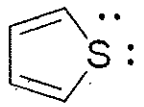


(I)

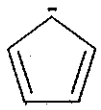
(II)



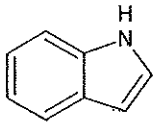
(III)



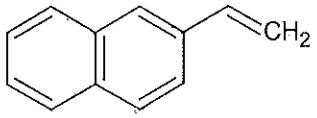
(IV)



(V)



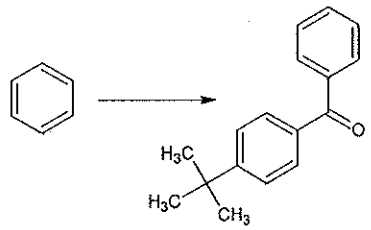
(VI)



(VII)

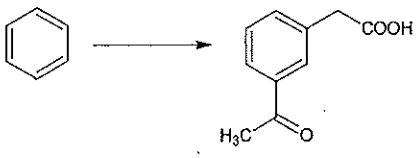
4. Giving necessary reagents and conditions, show how you would carry out the following multistep transformations. (20 marks)

a)

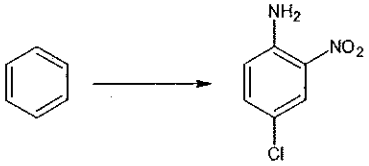


b)

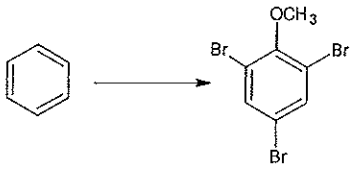
c)

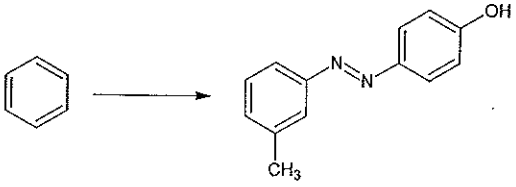


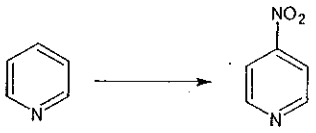
d)



5. Complete following conversions giving necessary reagents and conditions. (20 marks)

a) 

b) 

c) 

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