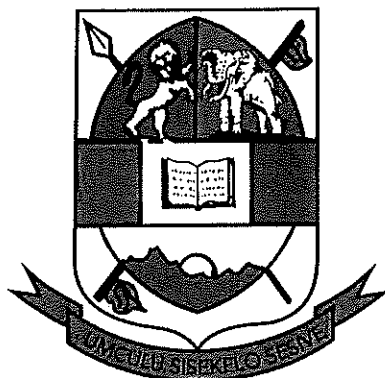


UNIVERSITY OF ESWATINI**Resit – 2019/2020**

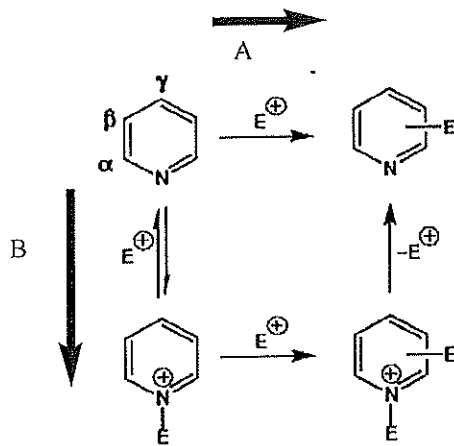
TITLE OF PAPER:**Heterocyclic Chemistry****COURSE NUMBER:****CHE 431****TIME ALLOWED:****Three Hours****INSTRUCTIONS:**

**Answer any four (4) questions of the six (6) questions and every question holds 25 marks.
NB: all questions are to be answered in a separate answer sheet.**

Please do not open this paper until authorised to do so by the Chief Invigilator.

Question 1

- a) Which of the two reactions A and B is very common and of high yield? Why? (8)



- b) Would it also be the same with Nucleophilic Substitution reaction? Compare? (7)
 c) Which is more basic among pyrrole and Pyrrolidine and why? (5)
 d) Which is more reactive between pyridine and imidazole? (5)

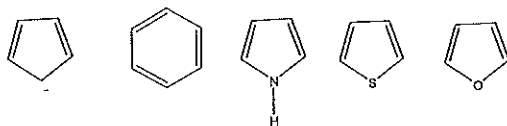
Question 2

- a) Cyclohexane and Benzene are two organic molecules with very much contrasting reactions and properties such as aromaticity. Define aromaticity and what are the necessary conditions for aromaticity? (10)
 b) How do the structures of cyclohexane and benzene differ? (5)
 c) Arrange the following cyclic alkanes in the order of their stability and give reasons for the order. Which of the following Cycloalkanes has the most ring strain? (10)

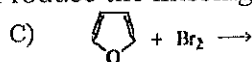


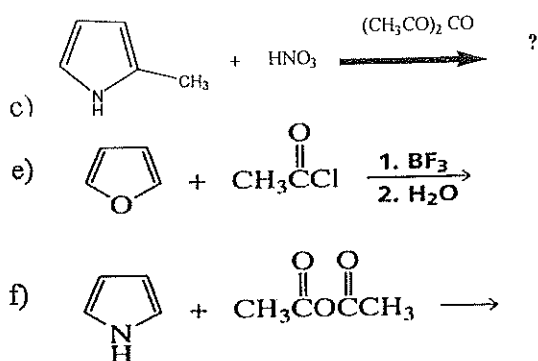
Question 3

- a) Why is pyridine less reactive than piperidine? Explain. (7)
 b) Arrange the compounds in the increase of their resonance energies and give reasons for that. (6)



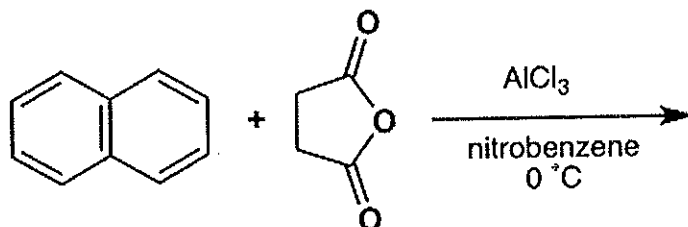
Produce the missing reaction products in the following reaction condition. (3*4)



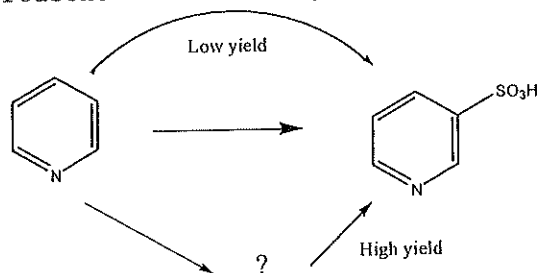


Question 4

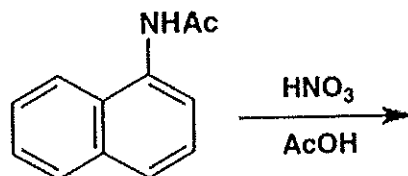
a) Which is the most probable main product of the following reaction? (5)



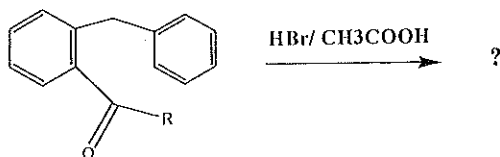
b) Provide the reagents and intermediates in the following reaction. Give reasons for the low yield and high yield in the reactions. (6)



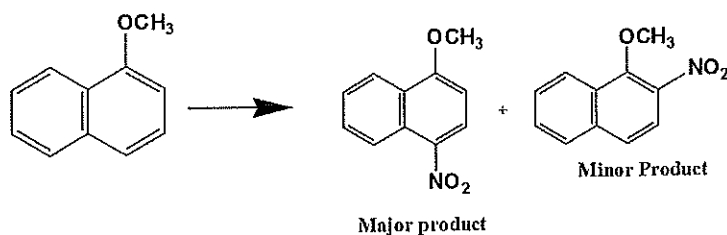
ii) Which is the most probable main product of the following reaction? (5)



c) Which is the most probable main product of the following reaction? (5)

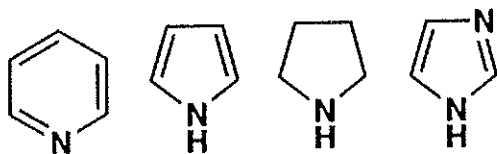


d) Give reasons why the reaction below is going as indicated below. (4)

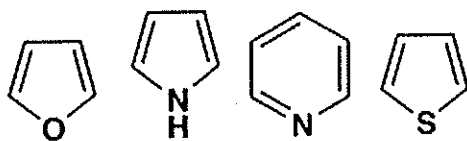


Question 5

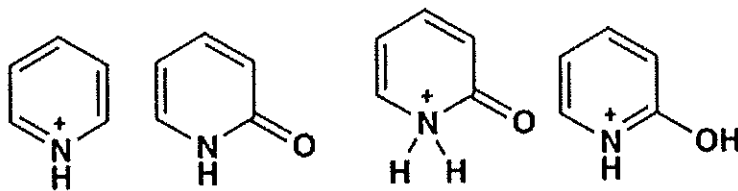
a) Which of the following compounds show base properties? Arrange them in order and give reasons for the order of basicity. (7)



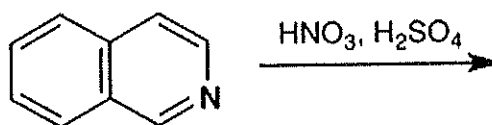
b) Which of the following compounds are reactive in electrophilic aromatic substitution? Put them in the order of reactivity and give reasons. (8)



c) Which of the following structures is not aromatic? Why? (5)

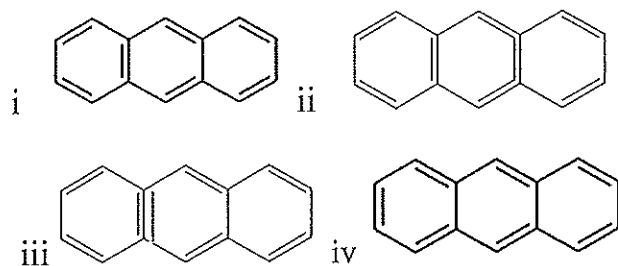


d) Which is the most probable main product of the following reaction? Why? (5)

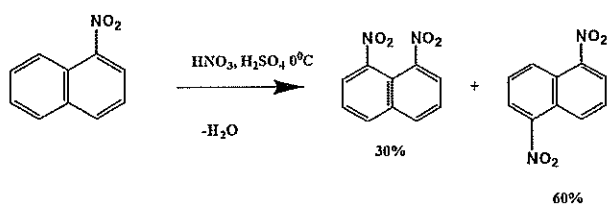


Question 6

a) Which of the following structures is not a resonance contributor of Anthracene? Why? (8)



- b) Naphthalene-2-ol (2-naphthol) readily gives a dibromo substitution product with bromine in ethanoic acid. What is the most likely structure of this compound? (7)
- c) What brings the difference in yield? Explain? (4)



- d) What are the reaction products of the following scheme? Give reasons? (6)

