



MASENO UNIVERSITY

UNIVERSITY EXAMINATIONS 2012/2013

SECOND YEAR FIRST SEMESTER EXAMINATIONS FOR THE DEGREE OF BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE & TECHNOLOGY WITH INFORMATION TECHNOLOGY (MAIN CAMPUS - SPECIAL EXAMS)

PPS 218: HETEROCYCLIC CHEMISTRY

Date: 30th July, 2013

Time: 9.00 – 11.00 a.m.

INSTRUCTIONS:

SECTION A: Answer ALL QUESTIONS (40 marks).

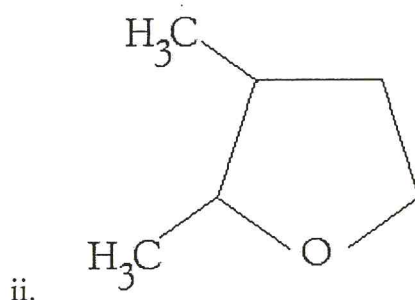
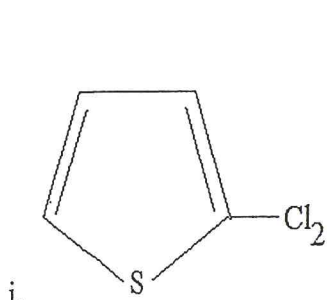
SECTION B: Answer ANY TWO questions from this Section (30 marks).

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SECTION A (40 MARKS). Answer ALL the questions in this section.

1. Name the following heterocyclic compounds



(4 mks)

2. Draw the chemical structures of the following Heterocyclic compounds

a) 5 – Nitroquinoline

b) 4 – Chlorothiazole

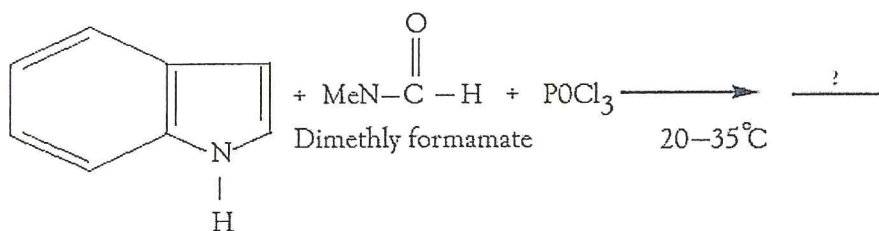
(4 mks)

3. Explain by illustrations what happens when there is protonation of furan at position 3 carbon.

(4 mks)

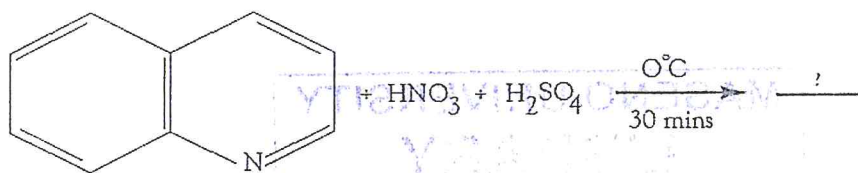
4. Formulate the products from the following reactions.

a)



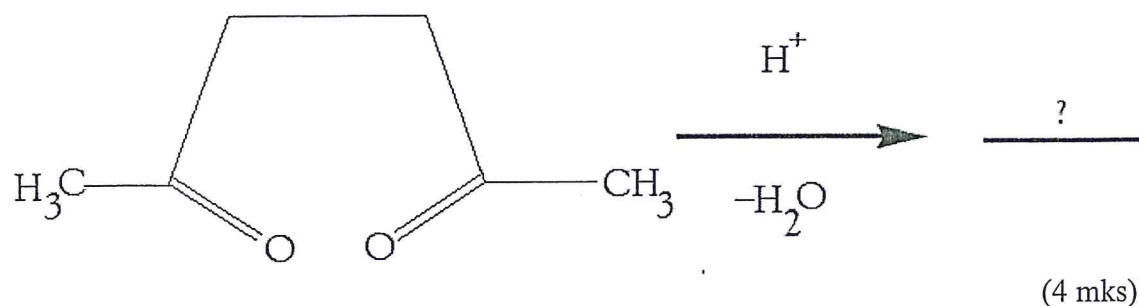
(2 marks)

b).

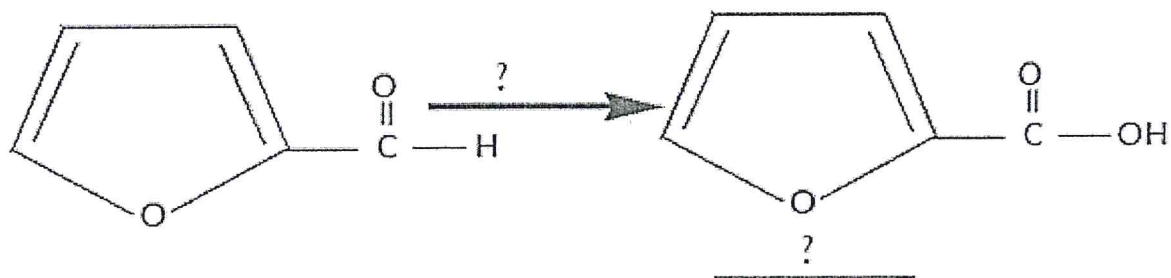


(2 marks)

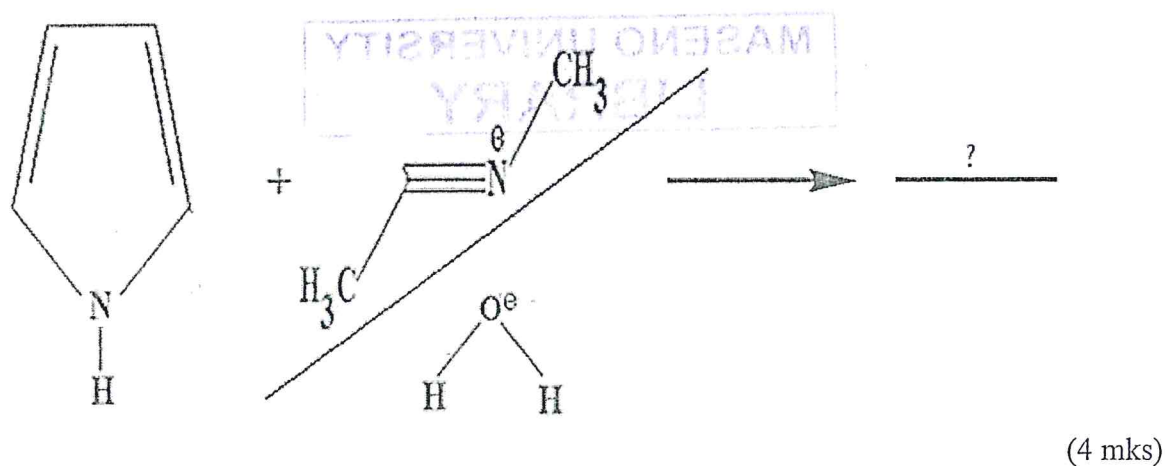
6. Complete the following reaction schemes providing brief mechanistic detail.



7. Fill in the missing reactant



i.



8. Why is electrophilic attack at S atom of thiophene unusual?

9. What are the economic importance of the following heterocyclic compounds?

a). *Reserpine*

b). *Penicilium G*

(4 mks)

10. Outline the mechanistic details of the formation of 2-Keto benzofuran?

SECTION B: Answer any **TWO** questions from this section (30 marks).

11. Discuss with appropriate illustrations

a) The behaviour of pyrrole in a strong acid environment. (7 mks)

b) The behaviour of pyrrole in a high oxygen concentration. (8 mks)

12. Discuss the Heinsberg Synthesis of Thiophene (15 mks)

13. Discuss with at least 3 examples the reaction of indoles with electrophiles. (15 mks)

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