



Eastern University, Sri Lanka

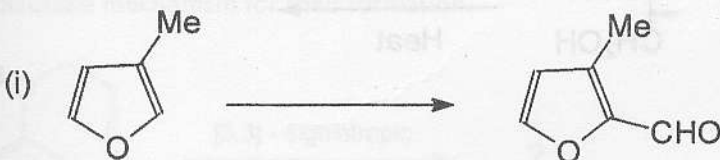
Third Year Special Repeat Examination in Science
2008/2009 (February 2010)

CH 302 Heterocyclic Chemistry and Organic
Rearrangement Reactions

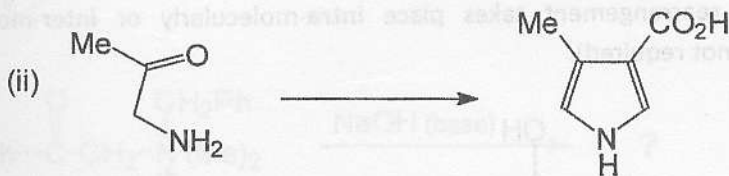
Time Allowed: ONE HOUR

Answer all the questions

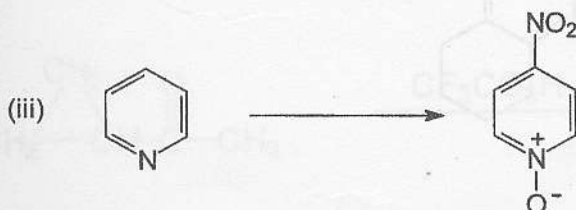
1. (a) Show by means of equations how the following transformations could be effected. Give essential experimental conditions.



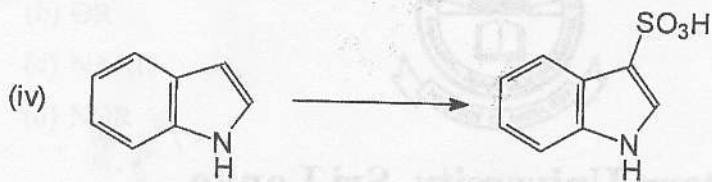
10 marks



10 marks



10 marks



10 marks

(b) Explain the following observations

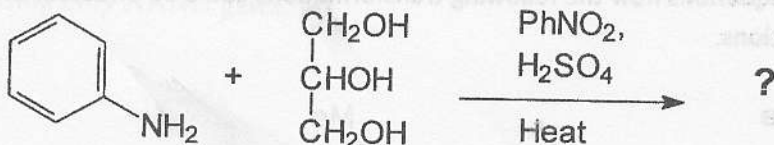
(i) Nitration of pyrrole is carried out with acetyl nitrate (AcONO_2) as the nitrating agent and cannot be effected with the normal nitrating mixtures suitable for benzene.

15 marks

(ii) Electrophilic substitution reactions takes place preferentially at position 3 of the five membered ring in indole.

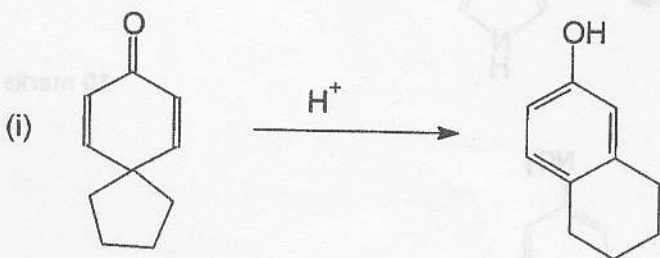
15 marks

(c) Give reasons (ie. Mechanism) predict the product formed in the following reaction.

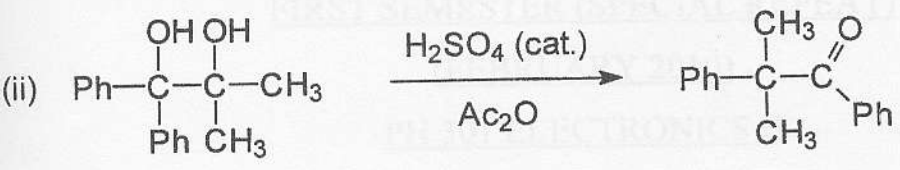


30 marks

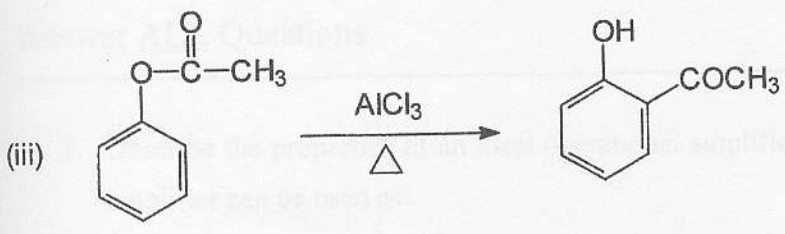
2. (a) Classify the following as involving electrophilic or nucleophilic rearrangement and also indicate in each case whether the rearrangement takes place **intra-molecularly** or **inter-molecularly**. (Detailed mechanisms are not required).



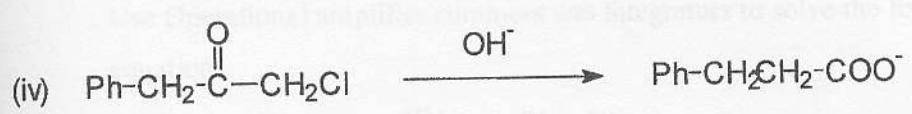
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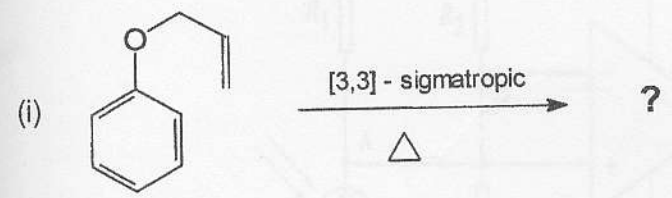


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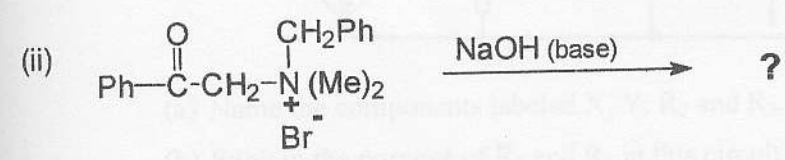


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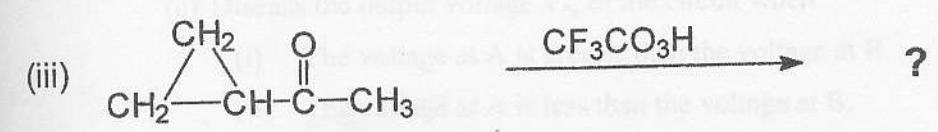
(b) Give the structure of the product(s) formed in each of the following rearrangement reaction and suggests plausible mechanism for their formation.



20 marks



20 marks



20 marks

End of Paper