NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
MARCH/APRIL 2016 EXAMINATION

SCHOOL OF SCIENCE AND TECHNOLOGY

COURSE CODE: **CHM416**
COURSE TITLE: **ORGANIC SYNTHESIS**

TIME: **2 HOURS**
CREDIT UNIT: 2
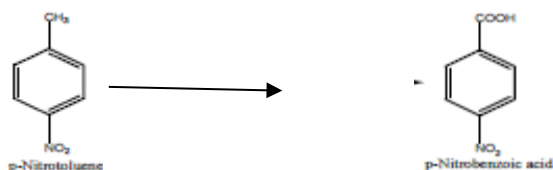**INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER THREE QUESTIONS**

1a) Define Diels-Alder reaction. (3½ marks)

   b) Explain how 1,3-butadiene and ethene can be used to form cyclohexen
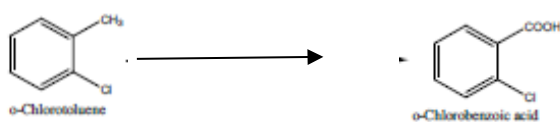
(7 marks)

   c) Show the synthesis of cortisone via Diel-Alders reaction. (7 marks)

2a)   Indicate the reaction conditions for the reactions below.
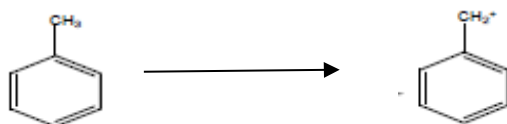
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(3 marks for each)

2b) Using chemical equation, show the preparation of chromic acid. (8½ marks)

3a) Discuss the oxidation of primary alcohols to carboxylic acids. (10 marks)
3b) Write short note on the application of ozone in functional group transformation.
(7½ marks)

4a) The compounds having the general formula RCO3H are called _____. (2½   marks)
4b) List members of this group. (5 marks)
4c) Discuss the oxidation of ketones with peroxy-acids. (10 marks)

5a) Explain the hydroxylation of alkenes. (9½ marks)
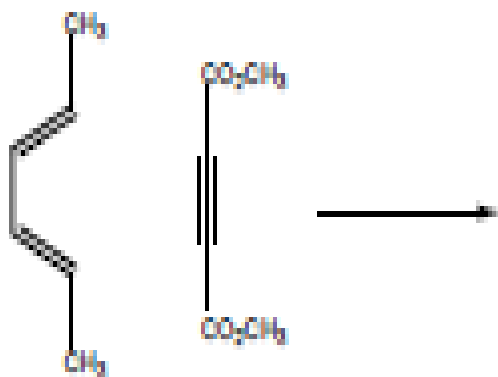 5b) What product is formed when:
      (i) CH_3CH_2OH reacts with acidic dichromate ($Cr_2O_7^{2-}$)?
      (ii) CH_3CH_2OH reacts with pyridinium chlorochromate (PCC)?
(8marks)

6a) Show the mechanism of Wittig reaction. (6½ marks)
6b) What is the major product of the following reaction?   (6 marks)

6c) State the advantages of wittig reaction.   (5 marks)