NATIONAL OPEN UNIVERSITY OF NIGERIA
14-16 AHMADU BELLO WAY, VICTORIA ISLAND LAGOS
SEPTEMBER/OCTOBER 2015 EXAMINATION

SCHOOL OF SCIENCE AND TECHNOLOGY

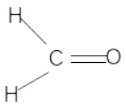
COURSE CODE CHM 416

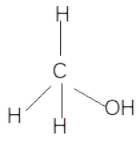
COURSE TITLE :ORGANIC SYNTHESIS

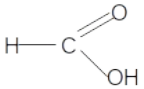
TIME: 2 HOURS

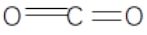
INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER THREE QUESTIONS

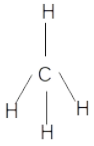
1a) Arrange compounds (a) – (e) in decreasing order of oxidation states (from most oxided to most reduced)

a) 

b) 

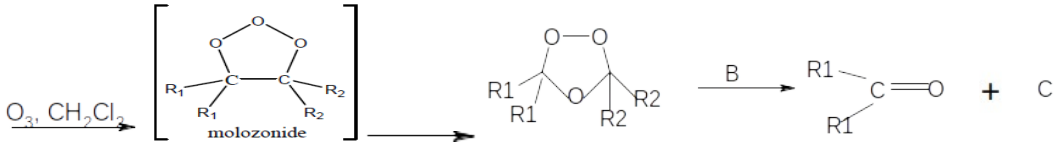
C) 

d) 

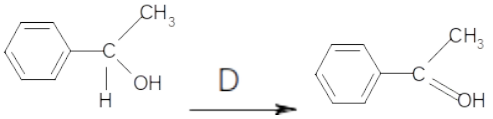
e) 

(5 MARKS)

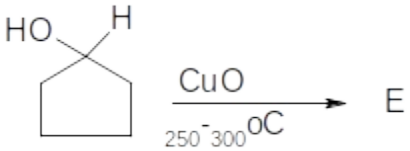
1b) Identify the reagent, reaction condition, or product represented by letters A – E in the following reactions:

i) A 

2 MARKS FOR EACH QUESTION MARK = 6 MARKS

ii) 

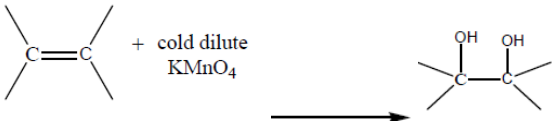
2 MARKS

iii) 

2 MARKS

TOTAL MARKS 15 + 2 BONUS = 17 MARKS

2) a) For a reaction of the type depicted below, discuss briefly
(i) the reaction conditions,
(ii) the reaction intermediates, and
(iii) the mechanism;



(9 MARKS)

b) What type of reaction is this? (3 MARKS)

c) What is the effect of using a more concentrated solution of potassium permanganate are used in the oxidation of alkenes? Support your answer with relevant equations (5 MARKS)

3a) Discuss the Ozonolysis of alkenes. (17 MARKS)

4a) PPC is an oxidizing reagent that is applicable in a functional group transformation.

a) What is the meaning of PCC? (3 MARKS)
b) Explain the simple method of preparing PCC (5 MARKS)
c) Discuss the application of PPC in functional group transformation. (9 MARKS)

5a) List any two methods by which a C=O group can be converted to a CH_2. (5 MARKS)

5b)Choose one of the reaction methods listed in 5a above and discuss it in detail. (12 MARKS)

6a) Discuss the mechanism of Aldol condensation. (12 MARKS)

6b) What are the advantages of the Wittig reaction? (5 MARKS)

TOTAL MARK = 68 MARKS ALLOTED + 2 BONUS = 70 MARKS