



NATIONAL OPEN UNIVERSITY OF NIGERIA
 PLOT 91, CADASTRAL ZONE, NNAMDI AZIKIWE EXPRESSWAY, JABI - ABUJA
FACULTY OF SCIENCES
DEPARTMENT OF PURE & APPLIED SCIENCES
2021_2 EXAMINATION 45678

COURSE CODE: CHM 421

CREDIT: 2 Units

COURSE TITLE: HETEROCYCLIC CHEMISTRY **TIME ALLOWED: 2 Hours**

INSTRUCTION: Answer Question ONE (1) and any other Three (3) Questions

Q1. Give the products of the following reactions:



d). Write short note on each of the following (Hint: No equation is required):

i) Reduction of Indole (5 marks)

ii) Reduction of Isoquinoline (5 marks)

Q2. a) List five plants that are rich in coumarin (5 marks)

b) Briefly explain the bromination of coumarin under different conditions (5 marks)

c) Itemize five uses of quinine (5 marks)

Q3 a) With the aid of equation, show cyanidin color changes with respect to pH (5 marks)

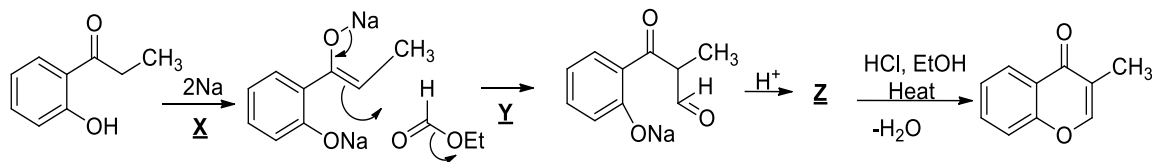
b) Explain why chromone is more basic compared to coumarin (5 marks)

c) Describe in concise term, the preparation of racemic warfarin? (5 marks)

Q4 a) Outline synthesis of benzofuran from a suitable aldehyde and ketone (6 marks)

b) Give two trade mark names of indomethacin as a marketed drug (3 marks)

c) Provide names or structures of X, Y and Z in chromones synthesis below (6 marks)



Q5 Carefully study the underlisted and provide correct structures of the products

