

SOUTHWESTERN UNIVERSITY NIGERIA

KM 20, SAGAMU-BENIN EXPRESSWAY, OKUN OWA, IJEBU-ODE, OGUN STATE.

FACULTY OF PURE & APPLIED SCIENCES

DEPARTMENT OF COMPUTER SCIENCE

HND TO BSC CONVERSION PROGRAMME

2018/2019 SECOND SEMESTER EXAMINATION

COURSE CODE: CSC 306

COURSE TITLE: Algorithm and Complex Analysis

INSTRUCTION: Answer question 1 and any other three questions. **TIME:** 2hrs

1. (a) Using iterative method, solve the recurrence where $T(n) = 2T(n/2) + n$
Such that running time is $n(\lg n + 1) = n\lg n + n$
- (b) Outline the divide and conquer strategy in solving a problem
- (c) Outline five(5) characteristics of an algorithm
- (d) Define a recurrence showing its expression
2. Using the order of growth, derive the three cases of efficiency, using the following sequence.
25, 31, 42, 71, 105
3. (a) Using Asymptotic notations derive an expression for the big O. (show diagram)
- (b) Write short note on two expectations of an algorithm
4. (a) Using an Asymptotic notation, derive an expression for the big θ (show diagram)
- (b) Give a brief explanation on what it means to analyze an algorithm.
5. (a) Write a short note on the complexity of an algorithm
- (b) Using an Asymptotic notation, derive an expression for the big omega (show diagram).