ELIZADE UNIVERSITY

ILARA-MOKIN

FACULTY: BASIC AND APPLIED SCIENCES
DEPARTMENT: MATHEMATICS AND COMPUTER SCIENCE
1st **SEMESTER EXAMINATION** 2019 / 2020 **ACADEMIC SESSION**

COURSE CODE: CSC 205 **COURSE TITLE:** Data Structures

COURSE LEADER: Dr. Joshua Tom Joshua **DURATION:** 2 ½ Hours

HOD's SIGNATURE

INSTRUCTION:

Candidates should answer any **FOUR** Questions.
Students are warned that possession of any unauthorized materials in an examination is a serious assessment offence.

1. (a) Prove that $\overline{A \cap B} = \bar{A} \cup \bar{B}$
   (b) Discrete Structures is the mathematics underlying almost all of Computer Science. Mention any 5 applications of Discrete Structures in Computer Science.
   (c) A bowl contains 6 red balls and 6 blue balls. A woman is selecting balls blindfolded.
   (i) What is the minimum number of balls to select to ensure that she selects at least 3 blue balls? (ii) What is the minimum number of balls to select to ensure that she selects 3 balls of the same colour?

2. (a) Prove that $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$
   (b) In a group of 60 people, 27 like coffee and 42 like tea and each person likes at least one of the two. How many like both coffee and tea?
   (c) What do you understand by propositional logic? (d) Indicate whether each of the statements given below is a proposition or not.
   (i) The square of The square of x is greater than 45 (ii) It is very hot in Akure
   (iii) Those students are very studious (iv) 2 is a number