GRETSA UNIVERSITY - THIKA

UNIVERSITY EXAMINATIONS
MAY - AUGUST 2018 SEMESTER

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

COURSE CODE: BSCS 202

COURSE TITLE: DIGITAL ELECTRONICS II

DATE: 9 AUGUST 2018   **TIME: 8.00 AM – 11.00 AM**

INSTRUCTIONS TO CANDIDATES

1. SECTION A IS **COMPULSORY.**
2. SECTION B: ANSWER ANY OTHER **THREE** QUESTIONS.
3. **DO NOT** WRITE ANYTHING ON THIS QUESTION PAPER AS IT WILL BE AN EXAM IRREGULARITY.
4. ALL ROUGH WORK SHOULD BE AT THE BACK OF YOUR ANSWER BOOKLET AND CROSSED OUT.

CAUTION: All exam rooms are under CCTV surveillance during the examination period.

SECTION A: COMPULSORY

Question one

a) Discuss the advantages of digital systems [6marks]

b) Explain the characteristics of digital circuits [7marks]

c) Using appropriate diagrams, show:

    i. AND gate and truth table [5marks]

    ii. OR gare and truth table [5marks]

    iii. NOT gate and truth table [5marks]

d) In the case of AND and OR, explain the DeMorgans theorem using appropriate examples in each case [12marks]

SECTION B: ANSWER ANY THREE QUESTIONS

Question two

a) In the case of AND and OR, explain the DeMorgans theorem using appropriate examples in each case [10marks]

b) Using a case example, explain how the AND, OR and NOT gates are presented in C programming [10marks]

Question three

a) When analyzing NAND circuits, a NOT-OR can be substituted in place of a NAND gate. This is usually done at odd levels as shown below
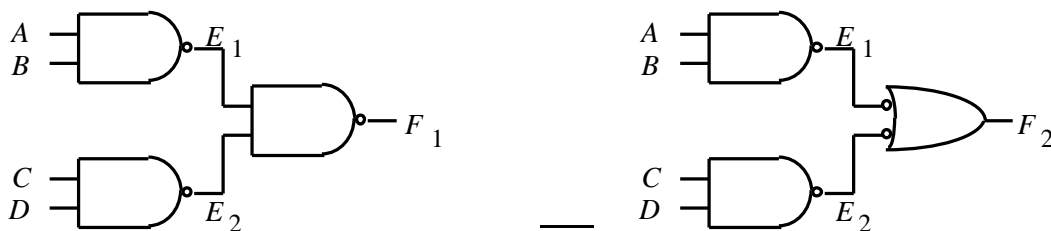
Express these using appropriate equations [20marks]

Question four

a) Map the following function into appropriate K-map representation [10marks]

$$F = \overline{A}\,\overline{B} + AB$$

b) Draw the diagram for a parallel load shift register [10marks]

Question five

Analyze the following in two ways to get sums of product and product of sums equations. Then show how you can get one from the other using DeMorgan's Theorem. [20 marks]