



COLLEGE OF BUSINESS, PEACE, LEADERSHIP AND GOVERNANCE

NCIS306: COMPUTER ARCHITECTURE AND ORGANISATION

END OF FIRST SEMESTER EXAMINATIONS

NOVEMBER 2021

LECTURER: MRS L. TEMBANI-FUNDISI

DURATION: 5 HOURS

INSTRUCTIONS

Answer all questions from **SECTION A (compulsory)**

Answer any other 3 question from **SECTION B**

Begin your answer to each question on a fresh page

Section A (COMPULSORY)

Question One

Instructions

- Save your simulator diagrams and Zip them and send together with your PDF answer document
- Snip or make a screen shots of all your simulated drawing, truth tables and expressions on your PDF answer document.

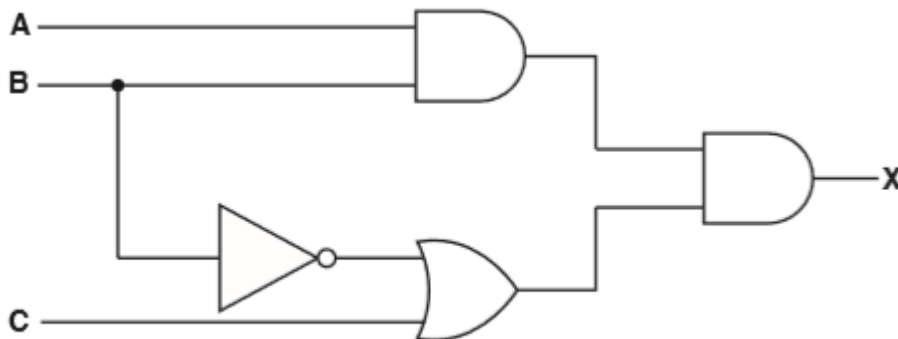
(a) Using the logic diagram simulator.

(i) Draw and Simulate the logic diagram from the Boolean expression shown below. [15]

$$x = \overline{A}BC(\overline{A+D})$$

(ii) Simulate the truth table [10]

(b) (i) Using the logic diagram simulator draw the logic circuit diagram below.[15]



(ii) Simulate the Boolean expression [5]

(iii) Simulate The truth table. [5]

Section B (Answer any 2 questions)

Question Two

Clearly differentiate the combinational circuits' full adder and half adder using the truth table, K-map, Boolean function and the logic gates. [25 marks]

Question Three

Discuss fully the application of flip flops in real computer world. [25marks]

Question Four

From the following minimized form of Logical expression

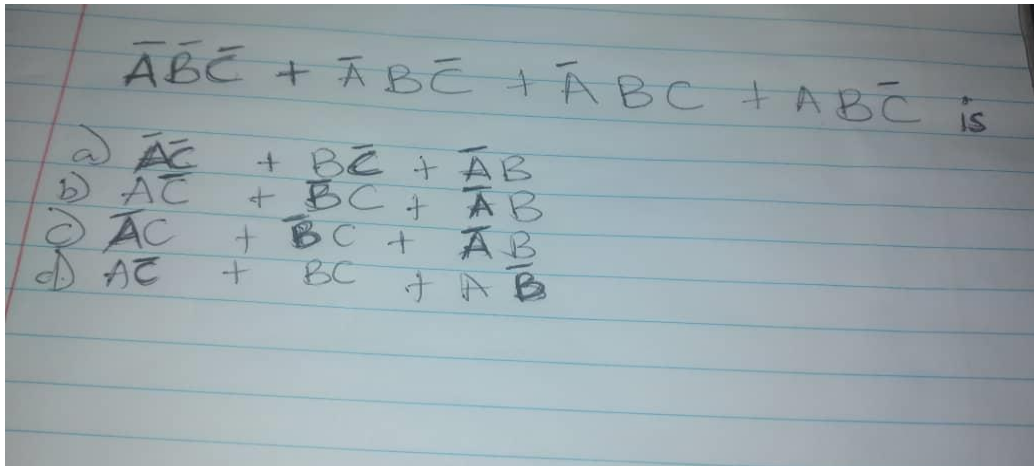
$$\bar{A}\bar{B}\bar{C} + \bar{A}B\bar{C} + \bar{A}BC + AB\bar{C}$$

(a) $\bar{A}\bar{C} + B\bar{C} + \bar{A}B$

(b) $A\bar{C} + \bar{B}C + \bar{A}B$

(c) $\bar{A}C + \bar{B}C + \bar{A}B$

(d) $A\bar{C} + BC + A\bar{B}$



Draw the K-Map from minimized logic expression. Also represent the minimized expression using basic logic gates. [25 marks]

END OF EXAMINATION