



**ELIZADE UNIVERSITY
ILARA-MOKIN**

**FACULTY: BASIC AND APPLIED SCIENCES
DEPARTMENT: MATHEMATICS AND COMPUTER SCIENCE
1st SEMESTER EXAMINATION
2018 / 2019 ACADEMIC SESSION**

COURSE CODE: CSC 208

COURSE TITLE: Digital Logic

COURSE LEADER: Mr. O. Babalola

DURATION: 2.5 Hours

HOD's SIGNATURE

INSTRUCTION:

Candidates should answer any three questions in the Let's Go Higher Section.

Students are warned that possession of any unauthorized materials in an examination is a serious assessment offence.

Refuge section

Don't attempt this question **EXCEPT** you've been **unserious** and now need refuge.

- i. Draw the truth table of $A+B$
- ii. Draw the truth table of $A.B$
- iii. Draw the truth table of $A+B.C$
- iv. Draw the truth table of A'
- v. Draw the logic diagrams for i-iv above

Let's go higher Section.

- 1a. Mention gates that are used in a two-level network?
 - b. What's the significance of a two-level network?
 - c. Is it possible to redesign a network as a two-level network? If yes, how?
 - d. Draw a one-level network and write out its Boolean function. Draw the truth table of the one-level network. All inputs should be labelled A, B, ...
 - e. Determine how many bits the following values are and whether they are odd or even.
i. 1110001110 ii. 1010101011 iii. 111000111000
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- 2a. What are minterms?
 - b. Draw the truth table of the $\Sigma(a,b,v) = \{1,2,7\}$.
 - c. What are maxterms? Draw the truth table for the maxterms for the above.
 - d. What is the difference between a sum-of-products and a product-of-sums? What is the similarity between the two?
 - e. Draw the layout of a 4 variable k-map, a 4 variable truth table, and a 4 variable 2-level network.
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3. a. What does a multiplexer do in a digital logic system? Design a 4-line multiplexer and draw its truth table. Your inputs should be labelled A,B,...
 - b. Explain what each aspect of a multiplexer does.
 - c. Why are demultiplexers important? Design a 8-line demultiplexer device.
 - d. Are there fractions in binary?
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4. List 2 types of logic networks
 - b. Mention 5 devices based on each type of network and what these devices are used for.
 - c. What are the differences between these two networks.
 - d. Convert the following from binary to octal, and decimal.
i. 011011011 ii. 100100100 iii. 110110110 iv. 111111111
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5. A network can be represented in a number of ways. List at least three ways and give examples.
 - ii. Draw a kmap for the function $x(a,b,c) = \Sigma(2, 4, 6) + d(0,7)$. Draw for $x(a,b,c) = \Sigma(2, 4, 6)$. What is the difference between these two functions? Minimize the two functions
 - iii. What is the least significant bit? What is the carry bit? What is the overflow bit?

Trivia Section: Answer these bits and stuffs to how off you understand CSC 208 (1 mark bonus each)

- I. I am a number, I am the same in decimal, same in hexadecimal, same in octal, and same in binary. What am I?
- II. I am a thing that turns signals to opposite. What am I?
- III. I make $1 + 1 = 1$. What am I?
- IV. I am a gate and only one thing can pass through me at a time. What am I?