NATIONAL OPEN UNIVERSITY OF NIGERIA
University Village, 91 Cadastral Zone, Nnamdi Azikwe Expressway, Jabi, Abuja
FACULTY OF SCIENCES
APRIL, 2019 EXAMINATIONS

COURSE CODE: CIT344
COURSE TITLE: Introduction to Computer Design
CREDIT: 3 Units
TIME ALLOWED: 2½ Hours
INSTRUCTION: Answer Question 1 and any other FOUR (4) Questions

1a) Briefly explain the Repeated Division-by-2 method. *(4 marks)*
 b) Convert 111010110101110010110 in binary to Octal *(2 marks)*
 c) State the advantages of assembly language over high level languages. *(4 marks)*
d) Compare the ASCII code and the Extended ASCII code *(3 marks)*
e) Briefly explain the term combinational logic circuit. *(2½ marks)*
f) Complete the Logic Function Generator based on 3-Variable Logic Function Table below:
 (2 marks)

Input			Output
A	**B**	**C**	**Y**
0	0	0	
0	0	1	
0	1	0	
0	1	1	
1	0	0	
1	0	1	
1	1	0	
1	1	1	

g) State the following the Sum and the Carry-out Boolean expressions for a Full-Adder.
 (3 marks)
h) List the three different types of edge-triggered flip-flops generally used in digital logic circuits. *(1½ marks)*

2a) Briefly explain how a combinational logic circuit can be analysed and designed.
 (6 marks)
b) What is a DeMUX? *(2 marks)*
c) List two (2) forms of DeMUX. *(2 marks)*
d) What is a Gray code? *(2 marks)*

3a) What do you understand by the term 'decoder'? *(2 marks)*

b) Give the truth table and logic symbol of a 2-to-4 Decoder. *(3 marks)*

c) Distinguish between Jumps and Loops *(2 marks)*

d) List the five ways of modeling the behaviour of finite state machines *(5 marks)*

4a) Enumerate any four different forms of Call instructions. *(4 marks)*

b) State the functions of the **far** call instruction *(4 marks)*

c) Briefly describe a sequencer, giving at least one example of a sequencer. *(2 marks)*

d) Write short notes on Read and Write Signals. *(2 marks)*

5a) State the functions of the **near** call instruction *(3 marks)*

b) State the function of an edge-detector? How does it perform this function? *(2 marks)*

c) Describe the Displacement-only addressing mode *(5 marks)*

d) State four uses of Edge-Triggered J-K Flip-Flops. *(2 marks)*

6a) State the two basic operations performed on memories and the signals typically used to support them. *(6 marks)*

b) State the two major functions of a register. *(2 marks)*

c) Outline four of the different forms of shift operations of a register. *(4 marks)*