BOWEN UNIVERSITY, IWO
COLLEGE OF COMPUTING AND COMMUNICATION STUDIES
COMPUTER SCIENCE PROGRAMME
B.Sc. SECOND SEMESTER EXAMINATION 2022/2023 SESSION
COURSE CODE: CIT 206 COURSE TITLE: LOW LEVEL LANGUAGE
COURSE CREDITS: 3 DATE : TIME: 2 hours
INSTRUCTION: ANSWER QUESTION ONE AND ANY OTHER TWO QUESTIONS

QUESTION ONE

MEMORY

Address	Content
0	ADD 5
1	MOVE 4
2	STORE 2
3	3
4	2
5	1

With reference to the processor you have learnt, explain with the aid of diagram how the given memory in the diagram above relates with various registers. **(4marks).**
Hence explain how the instruction ADD 5 will be fetched and executed by the processor.
(21marks)

QUESTION TWO

a. With respect to the processor you have studied in the course, under what condition(s) will the following flags:

i. Negative ii. Overflow iii. Carry iv. Zero

be raised by by Conditional Code Register (CCR) **(2marks each)**

b. Clearly state what each of the following Assembly Language Statement stand for:

i. MOVE.B $100,$200 ii. MOVE Q # 2,D3 iii. SWAP D7 iv. ADD.B D0,D1
v. SUBQ #1,D0 vi. AND1.B #6,D2 vii. BNE LOOP viii. BEQ LOOP
ix. CMP D1.W,D1,DO x. NOT. B **(1mark each)**

c. Write an Assembly Language program to execute the instruction

$Z = (X^2 - Y^2)/(X + Y)^2$ for a register based processor **(7marks)**

QUESTION THREE

a. Define the following

i. An assembler ii. An Assembly language **(3marks each)**

b. Write in full with their abbreviations four (4) examples of assemblers that you know **(4marks)**

c. i. Convert the Hexadecimal number FAD8 to binary **(4marks)**

ii. Convert the Binary number 1000 1100 1101 0001 to hexadecimal **(4marks)**

d. Write an assembly language program that displays " Season's Greetings to you all!"

Program to display" Season's Greetings" **(7marks)**

QUESTION FOUR

a. List and explain the three (3) types of assembly language statements **(9marks)**

b. Comment on each line of the following assembly language statements :

```
INC COUNT
MOV TOTAL, 48 ; Transfer the value 48 in the
      ; memory variable TOTAL
ADD AH, BH
AND MASK1, 128
ADD MARKS, 10
MOV AL, 10
```

(6marks)

c. Define registers? **(2marks)**

d. List seven (7) example of Control Registers **(7marks)**

QUESTION FIVE

a. Some Data Registers has specific uses in arithmetic operations, in a tabular form show their connections and explain their uses **(6marks)**

b. The 32-bits data registers can be used in three (3) ways, state them **(6marks)**

c. An assembly language program can be divided into three (3) sections, list and explain each of these sections. **(9marks)**

e. A negative binary is expressed in two's compliments notation. Apply this rule, to find the negative of the following decimal numbers in their binary equivalent and indicate whether an overflow occurs or not.

i. 53 ii. 15 **(4marks)**