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**University Examinations 2014/2015**

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF COMPUTER TECHNOLOGY

**CIC 3275: ASSEMBLY LANGUAGE**

**DATE: APRIL 2015 TIME: 2 HOURS**

**INSTRUCTIONS:** *Answer question* ***one*** *and any other* ***two*** *questions*

**QUESTION ONE (30 MARKS)**

1. Describe the three goals of data representation (6 Marks)
2. Convert the following numbers from binary to hex and then to decimal (6 Marks)

Binary hex decimal

1111 0011 1010 0001

1010 0110 1100 1010

1001 0010 0001 1111

1. Define the term instruction set and then describe the parts that make an instruction set

(6 Marks)

1. Describe four types of instructions and give suitable examples (8 Marks)
2. Explain the difference between the following assembler instructions (4 Marks)

MOV AX,100h

MOV AX,[100h]

**QUESTION TWO (20 MARKS)**

1. Distinguish between a complier and an assembler. Give an example in each case (5 Marks)
2. Describe any four different memory addressing modes (8 Marks)
3. Write a program in assembly that prints the message “Assembly programming is cool”

(7 Marks)

**QUESTION THREE (20 MARKS)**

1. Convert 7FAh to decimal (2 Marks)
2. Give three advantages of programming in assembly language over programming in high level languages (3 Marks)
3. Explain the fetch-execute instruction cycle (6 Marks)
4. Explain what is happening in the following assembly program (9 Marks)

Memory address Instruction

100 :

101 SUB X,Y

102 :

103 BRZ 111

: :

110 BR 101

111 :

: :

112 :

: BRE R1,R2,118

: :

118 :

**QUESTION FOUR (20 MARKS)**

1. When programming in assembly language, why would you be more motivated to select registers rather than main memory addressing (4 Marks)
2. What will be the value in ah after executing the following instructions (6 Marks)

mov al, 15

mov ah,15

add ah,al

mov cl,3

mal cl,ah

mov ah,cl

1. Write MASM assembly language code fragment that would execute a loop (10 Marks)

**QUESTION FIVE (20 MARKS)**

1. Distinguish between linkers, editors and debuggers (6 Marks)
2. Give any three reasons why we would be motivated to learn assembly language programming (6 Marks)
3. Explain the differences between the 16 bit and 32 bit general registers of the x86 family of processors and then show how 32 bit assembly programming has affected the industry (8 Marks)