KABARAK   **UNIVERSITY**

UNIVERSITY EXAMINATIONS
2009/20010 ACADEMIC YEAR
FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: COMP 210

COURSE TITLE: ASSEMBLY LANGUAGE PROGRAMMING

STREAM: **Y2S1**

DAY: **MONDAY**

TIME: **2.00 – 4.00 P.M.**

DATE: **09/08/2010**

INSTRUCTIONS:

1. **This question paper has four questions**
2. **QUESTION ONE IS COMPULSORY AND HAS 30 MARKS**
3. **Answer any other two questions worth 20 marks**

PLEASE TURNOVER

QUESTION ONE (30 marks)

(a) Explain any three rules of using a MOV instruction with examples in each (6mks)

(b) Write an assembly language program to add DEh and 12h and store the sum in an accumulator (5mks)

(c) Explain any four general purpose registers in 8086 microprocessor (4mks)

(d) Explain the syntax for procedure declaration (4mks)

(e) What are the differences between macros and procedures (2mks)

(f) What happens to a stack pointer when you push a 16bit value into the stack (2mks)

(g) List the four registers that can be used to access memory (2mks)

(h) What is an addressing mode? Explain with examples the following

      (i)   Indirect Addressing mode

      (ii)   Immediate addressing mode (5mks)

QUESTION TWO (20 marks)

(a) Explain the relationship between compiler, assembler and linker with the aid of a diagram (4mks)

(b) What is wrong with these instructions; (i) MOV AL, 2DE1h

                              (ii) MOV BX, DS (2mks)

(c) What is the difference between BP and SP register (2mks)

(d) What is a bus? Explain three types of a buses in 8086 microprocessor with the size of each (5mks)

(e) Draw a diagram to express hierarchy of memories in terms of speed and size (4mks)

(f) What is a stack? List any two stack instructions (3mks)

QUESTION THREE (20 marks)

(a) If the sum of two 16 bit numbers results into a 17bit number, what will be the status of CF register? (2mks)

(b) Write an assembly language program to multiply any two 8-bit numbers (4mks)

(c) Explain the use of the following instructions (i) MOVSW

                                          (ii) POPF

                                          (iii) MUL (3mks)

(d) Explain the instruction execution cycle (6mks)

(e) Explain the use of directives with examples (2mks)

(f) List any three segment registers and their functions (3mks)

QUESTION FOUR (20 marks)

(a) Explain any two shift operations (4mks)

(b) Explain CALL and RET instructions (4mks)

(c) Write Short notes on the following (i) Structures
 (ii) XLAT (4mks)

(d) Write an assembly language program to demonstrate the use of DIV instruction (4mks)

(e) Perform the following operations. (i) $34_{10} = (?)_{16}$
 (ii) $4h = (?)_8$ (4mks)