

KABARAK



UNIVERSITY

UNIVERSITY EXAMINATIONS

2010/2011 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF COMPUTER SCIENCE

COURSE CODE: COMP 210

COURSE TITLE: ASSEMBLY LANGUAGE

PROGRAMMING

STREAM: Y2S1

DAY: WEDNESDAY

TIME: 2.00 – 4.00 P.M.

DATE: 09/12/2010

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 how you can use two's complement to perform subtraction of binary number with the use of addition operator **(5mks)**
- (b) List any four segment registers in 8086 microprocessor **(4mks)**
- (c) Write any three rules of using a MOV instruction with examples in each **(6mks)**
- (d) Explain with examples any three stack instructions **(6mks)**
- (e) What will be the result of performing SHR instruction on FEh. Demonstrate it and give the answer in hexadecimal **(5mks)**
- (f) Write an assembly language program to add 34h in BL register and 1Eh in AH register. Copy the result in DH register. **(4mks)**

QUESTION TWO (20 marks)

- (a) What happens to SP register when push operation is performed? **(2mks)**
- (b) What is the use of CALL instruction? Differentiate between near CALL and far CALL **(3mks)**
- (c) Explain the structure of assembly language program **(4mks)**
- (d) What is the use of XLAT instruction? **(2mks)**
- (e) What is a bus? Explain three types of buses in 8086 **(5mks)**
- (f) Perform the following operations. (i) $127 = (?)_{16}$
(ii) $255 = (?)_8$ **(4mks)**

QUESTION THREE (20 marks)

- (a) What is the range in decimal of any possible five bits in representing binary numbers **(2mks)**
- (b) Write an assembly language program to copy data from one segment register to another segment register using general register as an auxiliary **(4mks)**
- (c) Explain the use of the following instructions
 - (i) MOVS/B/W
 - (ii) PUSHF
 - (iii) SUB **(3mks)**
- (d) Explain the instruction execution cycle **(6mks)**
- (e) List any three general purpose registers and their functions **(3mks)**
- (f) What is wrong with these instructions;
 - i) MOV BH 256
 - ii) MOV 44H DL **(2mks)**

QUESTION FOUR (20 marks)

- (a) Draw a diagram to express hierarchy of memories in terms of speed and size **(4mks)**
- (b) Explain the data and address bus of 8086 microprocessor **(4mks)**
- (c) What is an addressing mode? Explain with examples the following
- (i) Register relative Addressing mode
 - (ii) Immediate addressing mode **(5mks)**
- (d) Write Short notes on the following
- (i) Procedures
 - (ii) Macros **(4mks)**
- (e) Write an assembly language program to demonstrate the use of MUL instruction. **(3mks)**