



KENYA METHODIST UNIVERSITY

END OF 1ST TRIMESTER 2010 EXAMINATIONS

FACULTY : **COMPUTING AND INFORMATICS**
DEPARTMENT : **COMPUTER INFORMATION SYSTEMS**
UNIT CODE : **CISY 311**
UNIT TITLE : **MICROPROCESSOR PROGRAMMING**
TIME : **2 HOURS**

Instructions:

- Answer question 1 and any other 2 questions.

Question 1 (30 marks)

- a) i) Name the three basic parts of a typical microprocessor. (3 mks)
ii) Explain what each of the above parts does. (3 mks)
- b) Explain two advantages and two disadvantages of the assembly program. (4 mks)
- c) Describe the purpose of the following microprocessor instructions. (5 mks)
- i) LOAD A mem
ii) SAVE B mem
iii) JNEQ
iv) JG addr.
v) JLE addr.
- d) State and explain five reasons why the study of assembly language is important. (5 mks)
- e) Discuss the following terms used in assembly language. (10 mks)
- i) Directive
ii) Label
iii) Fields
iv) Operation codes (Mnemonics)
v) Comments

Question 2 (15 marks)

- a) Below is a program that demonstrates the use of the move instruction. Explain each instruction line and the program output. (6 mks)

```
ORG, 100h
MOV, DS, AX
MOV CL, 'A'
MOV CH, 1001_111b
MOV BX, 15Eh
MOV [BX], CX
RET
```

- b) What is a base register? Explain the function of the eight emu8086 base registers. (5 mks)
- c) Given an emu8086 process register which contain values DS=250 BX=65 and SI=20, calculate $[BX+SI] + 95$ which is the effective address of the physical memory location. (4 mks)

Question 3 (15 marks)

- a) Differentiate variable from arrays giving examples. (6 mks)
- b) Describe the output of the following code; (5 mks)

```
ORG 100h,  
MOV AL, Var1  
MOV BX, Var2  
RET ; Stops the program  
Var1 DB7  
Var2 DW 1234h
```

- c) Explain giving examples of the usage of interrupts in microprocessor programming. (4 mks)

Question 4 (15 marks)

- a) Discuss five macros described by the emu8086.inc include library. (5 mks)
- b) State and explain any five types of flags used in the 8086 arithmetic and logic functions. (5 mks)
- c) Using simple program flow instructions in emu8086 illustrate the use of the JMP instruction. (5 mks)