

TECHNICAL UNIVERSITY

OF MOMBASA

FOET

COMPUTING AND INFORMATICS

UNIVERSITY EXAMINATION FOR:

BACHELOR OF TECHNOLOGY IN INFORMATION AND COMMUNICATION
TECHNOLOGY EIT 4306: SYSTEMS PROGRAMMING

END OF SEMESTER EXAMINATION

SERIES:2016/2017

TIME:2 HOURS

DATE:Pick DateSelect MonthPick Year

Instructions to Candidates

You should have the following for this examination

-Answer Booklet, examination pass and student ID

This paper consists of 5 questions. Attempt **Question ONE** (Mandatory) and any TWO questions

Do not write on the question paper.

INSTRUCTIONS: Answer Question ONE and any TWO questions.

SECTION A

QUESTION 1(30 Marks)

- a. Explain the function of the following assembler directives:
 - i. Assume
 - ii. Org
- iii. Ends

iv. DB (4 Marks)

b. Define opcode and operand, and specify the opcode and the operand in the instruction MOV H, L. (3 Marks)

- c. Differentiate between the following types of interrupts
 - i. Hardware and software interrupts
 - ii. Vectored and Non Vectored interrupt:
- iii. Maskable and Non Maskable interrupts. (6 Marks)
- c. Explain in brief the functions of the following 8086 pins:

i.	ALE	
ii.	INTR	
iii.	Ready	
iv.	Reset	
v.	BHE /S7	(5 Marks)
e. Wi	rite a program in assembly language that displays the message "welcome to asser	nbly
langu	age programming" on the screen.	(6 Marks)
f. D	raw and explain the timing diagram of write cycle in 8086 in minimum mode.	
		(6 Marks)
OUF	CSTION 2(20 Marks)	
	st any four flag registers in 8086	(4 Marks)
b. D	Distinguish between:	
i.	Compiler and assembler program	
ii.	Macro and procedure	
iii.	External and internal interrupts	(6 Marks)
	entify the function of the following string commands in assembly language	
i.	SCAS	
ii.	INS	
iii.	LODS	(6 Marks)
d. Ex	splain the two separate units of the 8086 CPU	(4 Marks)
<u>QUE</u>	CSTION 3(20 Marks)	
a. W]	hat are the advantages of an assembly language in comparison with high level	
Languages?		
b. Differentiate RISC and CISC processors.		
c. W	hat is the need for unconditional jump instructions, explain different conditional	jump
supported by 8086.		
d. Di	scuss the modes of data transfer in Direct Memory access (DMA)	(6 Marks)

QUESTION 4(20 Marks)

- a. Explain the following assembly language development tools
 - i. Loaders

ii.	Linker		
iii.	Assembler	(3 Marks)	
b. Describe the assembly language development phases		(6 Marks)	
c. Usin i. ii.	ng example explain the function of the following assembly directives ORG PROC		
iii.	EQU	(6 Marks)	
d. Stat	e conditions that will make execution unit (EU) of 8086 enter wait mode	(6 Marks)	
QUESTION 5(20 Marks)			
a. Wha	at is interrupt vector table?	(2 Marks)	
b. What is the difference between minimum and maximum modes of 8086? How are these			
	selected? Ferentiate between the following instructions:	(4 Marks)	
i.	RCL and RCR		
ii.	ADD and ADC		
iii.	ROL and ROR	(6 Marks)	
d. Des	(8 Marks)		