



# THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of Jkuat)

## *Faculty of Engineering and Technology*

### DEPARTMENT OF ELECTRICAL AND ELECTRONIC ENGINEERING

#### DIPLOMA IN TECHNOLOGY

TELECOMMUNICATION & INFORMATION ENGINEERING  
INSTRUMENTATION & CONTROL ENGINEERING  
ELECTRONICS & AUTOMATION ENGINEERING

**EEE 2309: MICROPROCESSOR TECHNOLOGY II**

**END OF SEMESTER EXAMINATIONS**

SERIES: AUGUST/SEPTEMBER 2011

TIME: 2 HOURS

#### **Instructions to Candidates:**

You should have the following for this examination

- *Question paper*
- *Answer booklet*
- *8085 Instruction Set*

Answer question **ONE (COMPULSORY)** and any other **TWO** questions

This paper consists of **THREE** printed pages

**Question 1 (Compulsory)**

- a) Explain the following terms:
- (i) Interpreter
  - (ii) Interrupt latency
  - (iii) Microinstruction
  - (iv) Microprogram (8 marks)
- b) Explain **THREE** conditions for DMA transfer to occur. (6 marks)
- c) Describe how priority can be established using;
- (i) Software polling
  - (ii) Hardware polling (Daisy chain)
  - (iii) Hardware identification (vectored interrupts) (6 marks)
- d) (i) Describe the following types of interrupts
- (a) Software interrupts
  - (b) Hardware interrupts
  - (c) Vectored interrupts
- (ii) State **TWO** advantages of virtual machines (8 marks)
- e) State any **FOUR** desirable features in an operating system (2 marks)

**Question 2**

- a) State **THREE** components contained in a super I/O chip (3 marks)
- b) With the aid of a block diagram, explain the basic operation of a successive approximation ADC (11 marks)
- c) Using a block diagram, explain how an I/O processor is interfaced to the CPU (6 marks)

**Question 3 – (20 marks)**

- a) Explain the steps followed in the design of software (6 marks)
- b) Explain the functions of the following
- (i) Editor
  - (ii) Compiler
  - (iii) Assembler
  - (iv) Linker
  - (v) Loader (10 marks)
- c) Define the terms:
- (i) Handlers
  - (ii) Non-maskable interrupts (2 marks)

d) State any **TWO** advantages of microprogramming (2 marks)

**Question 4**

a) Explain **FOUR** errors that occur in the transmission of words in the UART device (8 marks)

b) Explain **THREE** applications of interrupts (6 marks)

c) Explain the following terms;

i) Control word

ii) Dynamic compilation

iii) PIC

(6 marks)

**Question 5 – (20 marks)**

a) (i) Differentiate between Hardwired control and microprogrammed control (4 marks)

(iii) With the aid of a diagram, explain the microinstruction format (6 marks)

b) (i) State **FOUR** advantages of serial data transfer over parallel data transfer (4 marks)

(ii) Describe the following approaches that are used to develop microcomputer based systems.

(a) Microcomputer kit

(b) Dedicated microprocessor development system

(c) Simulators

(6 marks)