



THE MOMBASA POLYTECHNIC UNIVERSITY COLLEGE

(A Constituent College of JKUAT)

Faculty of Engineering & Technology

DEPARTMENT OF ELECTRICAL & ELECTRONIC ENGINEERING

UNIVERSITY EXAMINATION FOR DEGREE IN BACHELOR OF SCIENCE IN ELECTRICAL & ELECTRONIC ENGINEERING *[Institutional Based Programmes]*

EEE 4403: MICRO PROCESSOR II

END OF SEMESTER EXAMINATION

SERIES: AUGUST 2012

TIME: 2 HOURS

Instructions to Candidates:

You should have the following for this examination

- *Answer Booklet*

This paper consists of **FIVE** questions in **TWO** sections **I & II**

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

Maximum marks for each part of a question are as shown

This paper consists of **TWO** printed pages

SECTION I (COMPULSORY)

Question One (30 marks)

- a) (i) Distinguish between Microprocessor Functional Testing and Structural Testing Techniques.
(ii) Outline any **TWO** reasons each for carrying out the Testing Techniques of a(i) above. **(8 marks)**
- b) (i) Write a program segment that will initialize an Intel 8155 PIO Command register with the value CAH, assuming its output port address is 20H.
(ii) Describe a labeled PIO Command register layout as initialized in b(i) above. **(9 marks)**
- c) Develop an algorithm for a program that calculates an average of a given set of numbers. Apply the following techniques. **(13 marks)**
- i) Pseudo Code
 - ii) Flowchart

Question Two (20 marks)

- a) (i) List any **THREE** sources of interrupt in a microprocessor based system.
(ii) With aid of a flow chart, describe how interrupt source can be determined using software polling approach.
(iii) Give any **ONE** advantage and **ONE** disadvantage of method in a(ii) above. **(11 marks)**
- b) (i) List and explain any **THREE** debug program characteristics features for debugging a program. **(6 marks)**

Question Three (20 marks)

- a) With the aid of flow diagram, describe the procedures, activities and tasks involved in a software development cycle **(10 marks)**
- b) (i) Distinguish between top-down and bottom-up approach as applied in design and implementation of software system.
(ii) Explain any **THREE** functions of a file system management. **(10 marks)**

SECTION II (Answer any ONE question from this section)

Question Four (20 marks)

- a) (i) Outline any **TWO** function of each of the following software development tools.
- Linker
- Loader
(ii) Give any **THREE** characteristics that a computer re-entrant routine must possess **(6 marks)**
- b) (i) Apply the Modular design technique to design a program segment that will move a robot character on screen by using the user input from a keyboard.
(ii) Write the Pseudo code of any one of the Modules in b(i) above. **(14 marks)**

Question Five (20 marks)

- a) (i) Explain any **THREE** functions of an interface between a computer and peripheral device
(ii) Describe the **FOUR** commands that characterize the operation of an interface. **(14 marks)**
- b) Explain the **THREE** possible errors that asynchronous communication interface checks during data transmission. **(6 marks)**