**TECHNICAL UNIVERISTY OF MOMBASA**

# Faculty of Engineering & Technology

**UNIVERSITY EXAMINATION FOR:**
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
**(BSIT 11M – Y4 S1)**

**ICS 2305: SYSTEM PROGRAMMING**

END OF SEMESTER EXAMINATION
**SERIES:** APRIL 2014
**TIME:** 2 HOURS

**Instructions to Candidates:**
You should have the following for this examination
- *Answer Booklet*

This paper consists of **FIVE** questions.
Attempt question **ONE (COMPULSORY)** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **THREE** printed pages

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**Question One (Compulsory)**

**a)** Define the following terms:
- **(i)** Directory
- **(ii)** Process
- **(iii)** File
- **(iv)** Device Drivers **(8 marks)**

**b)** Describe the main goals of 1/0 management. **(4 marks)**

**c)** Describe the main device driver responsibilities. **(4 marks)**

**d)** Describe at least FOUR file operations **(4 marks)**

**e)** Explain the following write operations for a port with 16 bit port address. **(4 marks)**

Mov AL; IOH
Mov DX, 4000H
OUT DX, al

**f)** Explain THREE main responsibilities of operating system in each of the following:
- **(i)** Process management **(3 marks)**
- **(ii)** Memory management **(3 marks)**

**Question Two**

**a)** List the resources that need protection throughout the operating system activities. **(4 marks)**

**b)** State the need for operating system mechanisms. **(2 marks)**

**c)** Write a code fragment to read a character from the keyboard. **(4 marks)**

**d)** Explain the importance of the following activities in 1/0 management process:
- **(i)** Polling **(4 marks)**
- **(ii)** Interrupts **(4 marks)**

**e)** Define the term 'file system' **(2 marks)**

**Question Three**

a) Explain the following read operations for a port with 16 bit port address. **(4 marks)**
Mov DX 4000H
IN al, DX

b) Write a program to display 'Ms-DOS' using:
- (i) Character Output **(3 marks)**
- (ii) String output **(3 marks)**

c) Write a program to read a character from the keyboard and display it on the screen. **(6 marks)**

d) Write the correct command for the transfer of data from the physical memory address calculate using ds and (SI) to register AL (lower byte of AX register) **(4 marks)**

**Question Four**

a) Outline the various levels of 1/0. **(4 marks)**

b) Outline FOUR function of operating system in the management of files. **(4 marks)**

c) State FOUR tasks performed by the operating system in the management of inputs/outputs. **(4 marks)**

d) Identify various resources required by a process. **(4 marks)**

e) Distinguish between data register and accumulator **(4 marks)**

**Question Five**

**a)** Outline FOUR main responsibilities of the operating system in disk management. **(4 marks)**

**b)** List the context under which interrupt may occur. **(4 marks)**

**c)** State the FOUR classification OF 1/0 devices.

**d)** Describe the following registers:
(i) Code segment **(2 marks)**
(ii) Stack pointer **(2 marks)**

**e)** Explain the main purpose of execution unit. **(2 marks)**