TECHNICAL UNIVERISTY OF MOMBASA

Faculty of Engineering & Technology

DEPARTMENT OF COMPUTER SCIENCE & INFORMATION TECHNOLOGY

UNIVERSITY EXAMINATION FOR:
BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY
(BSIT)

ICS 2305: SYSTEMS PROGRAMMING

END OF SEMESTER EXAMINATION
SERIES: DECEMBER 2013
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** and any other **TWO** questions
Maximum marks for each part of a question are as shown
This paper consists of **TWO** printed pages

Question One (Compulsory)

a) State at last FOUR classification of input and output devices, in each case provide an example.
                                                                                (8 marks)

b) Define the following terms:
   (i)   Operating system module   **(3 marks)**
   (ii)   Operating system structure   **(3 marks)**
   (iii)   Programmed 1/0   **(3 marks)**
   (iv)   Direct Memory Access (DMA)   **(3 marks)**
   (v)   Polling   **(2 marks)**

c) (i) Protection is a general mechanism throuhout operating system. List at least FOUR objects
         (Resources) that need protection.   **(4 marks)**
    (ii) In file management, list TWO typical file operations **(2 marks)**

d) List at least THREE services provided by file system   **(3 marks)**

Question Two

a) Describe at least THREE contexts under which interrupt processing may happen **(9 marks)**

b) Suppose we are executing an instruction at i in program P when interrupt signal has been raised. Let us assume that we have an interrupt service routine which is to be initiated to service the interrupt. Describe how a typical interrupt service may happen. **(11 marks)**

Question Three

a) Define the following terms:
   (i)   Files   **(1 mark)**
   (ii) File Control Blocks (FCB)   **(3 marks)**
   (iii) Root File System   **(1 mark)**

b) (i) In file system management, list at least THREE types of information required for management of files. **(6 marks)**
   (ii) In each case (i) above state the uses of each. **(9 marks)**

Question Four

a) What are the TWO factors that need to be considered to determine the degree of multiprogramming in a system? **(6 marks)**

b) State the difference between the idle and blocked state of a process. **(4 marks)**

c) Describe the chronological order in the context of the birth of a process till the termination of the same process. **(10 marks)**

Question Five

Write short notes on the following basic modes of input/output operations listed below:

a) Programming mode   **(5 marks)**
b) Polling mode   **(5 marks)**
c) Interrupt mode   **(5 marks)**
d) Direct memory access   **(5 marks)**