MASENO UNIVERSITY

FIRST YEAR SECOND SEMESTER EXAMINATIONS FOR THE
DEGREE BACHELOR OF SCIENCE IN INFORMATION
TECHNOLOGY

(CITY CAMPUS - EVENING)

CIT 110: PLATFORM TECHNOLOGIES I

Date: 4th April, 2014   Time: 5.30 – 7.30 p.m.

INSTRUCTIONS:

- **Answer Question ONE and any other TWO questions.**

SECTION A: [Compulsory]

Question 1:

   a. Define the following terms and give an example in each case:

      i.   Instruction Execution.
      ii.   Interrupts.
      iii. Multithreading.
      iv. Microkernel
      v.   Symmetric multiprocessing

[2 Marks each]

   b. There are many pieces of information the operating system needs to keep around in its structures.

      i.   Explain three main resources and their critical information that need to be stored in operating system structure

[10 Marks]

      ii. One of the critical functions of the operating system is to ensure proper synchronization between threads. Explain the key function of threads

[2 marks]

      iii. Discuss the various approaches used in thread management

[8 Marks]

Question 2 [20 Marks]

   a. Explain the different concurrency requirements.   [6 Marks]

   b. (i) Using a suitable example define deadlock? (ii) Discuss the necessary conditions that must exist for deadlock to occur.

[10 Marks]

   c. Deadlock condition is not desirable and should be prevented to ensure efficiency of the system functionality, explain the various mechanisms that can be used to prevent deadlock.

[4 Marks]

Question 3: [20 Marks]

   a. Memory is one of the scarce resources that require efficient and proper management, explain Five Requirements for Memory Management that must be satisfied

[10 Marks]

   b. Give a brief description of the different techniques that are used for memory partitioning

[10 Marks]

Question 4: [20 Marks]

   a. Scheduling is the process of deciding what processes should be executed by the processor, describe the techniques that are employed in scheduling of processes.

[6 Marks]

b. If a disk has number of requests in what order will they be done, Discuss five disk scheduling techniques that are available. [10 Marks]

c. Redundant Array of Independent Disks (RAID) is a technique used if the data is on separate disks, for issuing of parallel commands, this can either be individual requests or a single large request. Discuss at least four different techniques that are usually used on this process. [4 Marks]

Question 5: [20 Marks]

(a) Explain five criteria that are used in file organization. [5 Marks]

(b) Explain five reasons that may lead to the termination of a process [10 Marks]

(c) Briefly explain five objectives of file management system. [5 Marks]