KABARAK **UNIVERSITY**

UNIVERSITY EXAMINATIONS

2010/2011 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF BUSINESS

MANAGEMENT & INFORMATION TECHNOLOGY

COURSE CODE: BMIT 227

COURSE TITLE: OPERATING SYSTEMS

STREAM: **Y2S2**

DAY: **TUESDAY**

TIME: **2.00 – 5.00 P.M.**

DATE: **07/12/2010**

INSTRUCTIONS:

Answer Question **ONE** and Any **Other THREE**

PLEASE TURNOVER

QUESTION ONE:-40 MARKS

a). Define an Operating system **(2 marks)**

b). Explain context switching and under what circumstances does it take place. **(4 marks)**

c) Differentiate between a thread and a process **(3 marks)**

d). Explain the meaning of the following terms
     i.   Quantum period
     ii.   Swapping
     iii.   Starvation **(4 marks)**
     iv.   Waiting time

e).Discuss the four main types of operating system stating clearly where they are used
(6 marks)
   .

f) Distinguish between segmentation and dynamic partitioning **(2 marks)**

g).with the aid of a neat diagram, state and explain different process states **(4 marks)**

h).State and explain different operating system services. **(5 marks)**

i).What is Inter-Process communication? State reasons for providing an environment that allows process cooperation **(4 marks)**

j). Explain in details three methods of recovering from a deadlock **(4 marks)**

k). Define a semaphore. Hence Explain how it help the processes to synchronize their activity. **(2 marks)**

QUESTION TWO:-20 MARKS

   a) What is a deadlock? Discuss the main necessary conditions for a deadlock to occur **(5 marks)**

   b) Differentiate between multitasking and multiprogramming **(3 marks)**

   c) What is a scheduler? Explain types of schedulers citing exactly where each is best applicable. **(4 marks)**
   d) State four benefits of threads **(3 marks)**

e) Consider the following resource allocation graph where R1,R2,R3,R4 are resources and P1,-----P3 are processes:

R_1

R_3

P_1

P_2

P_3

R_2

R_4
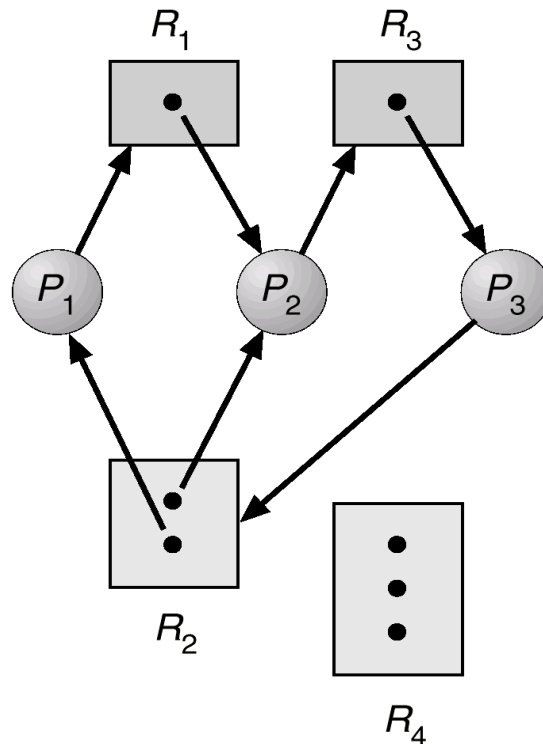
i).Explain cycles of requests taking place above   (**2 marks**)
ii). Will deadlock occur and Why?   (**3 marks**)

QUESTION THREE:-20 MARKS

a) Explain the main functions of the Operating System   (**4 marks**)

b) Explain five factors to consider when choosing an operating system   (**5 marks**)

c) Define Process control block   (**1 mark**)

d) List six information items that can PCB contain.   (**3 marks**)

e) How Does the Dispatcher Choose the Next process?   (**3 marks**)

f). Give distinction between I/O bound process and CPU bound process.   (**4 marks**)

QUESTION FOUR 20 MARKS

a) Define a preemptive and non preemptive scheduling. **(3 marks)**

b) Explain the following scheduling algorithms:-

        i).FCFS
        ii).SRT
        iii).Round Robin
        iv).Priority scheduling

                                                    (8 marks)

c) Differentiate how UNIX and DOS handle directory/filing structures **(4 marks)**

d) When does CPU scheduling decisions taken **(3 marks)**

e) What is a page fault? **(1 mark)**

f).what is Dispatch latency **(1 mark)**

QUESTION FIVE: 20 MARKS

a). Memory management is one of the major functions of the Operating system. Describe issues involved in the memory management. **(8 marks)**

b) Suppose the arrival order for the processes is
        ■ P2, P3, P1

Process	Burst time
P1	24
P2	3
P3	3

  i).Draw a Gantt chart for the above Schedule **(2 marks)**
  ii).Calculate waiting time hence get the average waiting time **(2 marks)**

c) What is meant by paging? Discuss Demand Paging in details **(6 marks)**

d). Why is Linux preferred in most organizations compared to windows **(2 marks)**