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 – 4.00 P.M.

DATE: 07/12/2010

INSTRUCTIONS:

Note: - Part-A is compulsory, has 40 marks and from **part-B,** you can **Attempt** any **TWO** questions. Each question has 30 marks

PLEASE TURNOVER

QUESTION 1

a) What are the major functions of an operating system? Explain any five.   **(10 Marks)**

b) Explain how multiprogramming contributes to higher CPU utilization and increased throughput.
                                                                                              (4 Marks)

c) What is processor registers? Explain its two functions.   **(5 Marks)**

d) How buffering affects the performance of a computer system?   **(7 Marks)**

e) What is the cache memory? Where does it exist in the system?   **(4 Marks)**

f) Explain, where does the operating system exist in the overall computer system?   **(5 Marks)**

g) What are the benefits of multiprocessing?   **(3 Marks)**

h) Shown below is the workload for 5 jobs arriving at time zero in the order given below:-

Job	Burst
1	10
2	29
3	3
4	7
5	12

Now considering FCFS [with quantum = 10] algorithms for this set of jobs, find out which algorithm would give the minimum average time.   **(2 Marks)**

PART B
QUESTION 2

    a) Differentiate between multiprocessing and multiprogramming. **(6 Marks)**

    b) What is a process scheduler? Explain any SIX characteristic of a good scheduler?

        (7 Marks)

    c) What is time slicing? How the time slicing duration affects the overall working of the system? **(4 Marks)**

    d) Write a short note on highest response ratio next (HRN) scheduling? **(6 Marks)**

       Write a short note on serial processing **(7 Marks)**

QUESTION 3

a) Differentiate between preemptive and non- preemptive scheduling. **(4 Marks)**

b) Consider a system with a set of processes P1, P2, P3 and P4. Let their arrival times and CPU burst times mentioned as below:-

Process	Arrival time	CPU Burst time
P1	0	3
P2	1	6
P3	5	4
P4	6	2

    (1) Draw the Gantt chart, using:
        (a) First- come-first-served(FCFS)
        (b) Shortest Job First (SJF)
        (c) Round Robin (RR) **(6 Marks)**
    (2) Calculate:
       Average waiting time. **(6 Marks)**
       [Assume quantum to be 2 units of time]

c) Explain any three access modes for operation on a file. **(3 Marks)**

d) (i) What do understand by file attributes ? **(2 Marks)**

   (ii) Explain any three categories of file attributes? **(3 Marks)**

e) (i) What is a dead lock situation? Give a example. **(4 Marks)**

   (ii) What are the TWO conditions for deadlock? **(2 Marks)**

QUESTION 4

a)   Explain the following allocation algorithms
   (i) First fit.
   (ii) Best fit.
   (iii)Worth fit.   **(9 Marks)**
b) (i) What are the functions of memory management? Explain any four. **(4 Marks)**
   (ii) Why is it necessary?   **(1 Mark)**
c) Consider a disk queue with request of I/O to block on cylinder
                      98, 183, 37, 122, 14, 124, 65, 67
If the disk head is initially at cylinder 53, then calculate total number of head movements using following algorithms:
   (i) FCFS
   (ii) SSTF   **(6 Marks)**

d) Explain any one way to avoid external fragmentation.   **(4 Marks)**

e) Explain any FOUR Device Management Function   **(4 Marks)**

f) What is Resident Monitor?   **(2 Marks)**

QUESTION 5

a) (i) When do scheduling decisions take place?   **(2 Marks)**

   (ii) When does CPU choose which process to run? Explain any four varieties of possibilities
                                                                     (4 Marks)

b) What are the four benefits of distributed system?   **(4 Marks)**

c) Differentiate between single program operating system and batch operating system. **(4 Marks)**

d) How to prevent priority inversions?   **(2 Marks)**

e) How does system perform translation?   **(2 Marks)**

f) (i) Why we need the memory management algorithms?   **(2 Marks)**

   (ii) Explain any four key issues   **(4 Marks)**

g)   (i) What is a process?   **(2 Marks)**
        (ii)Why Use Processes? Give two examples.   **(4 Marks)**