KABARAK   **UNIVERSITY**

EXAMINATIONS

2008/2009 ACADEMIC YEAR

FOR THE DEGREE OF BACHELOR OF BUSINESS MANAGEMENT AND INFORMATION TECHNOLOGY

COURSE CODE: **BMIT 227**

COURSE TITLE: **OPERATING SYSTEMS**

STREAM: **Y2S2**

DAY: **MONDAY**

TIME: **2.00 - 5.00 P.M.**

DATE: **15/12/2008**

INSTRUCTIONS:

1. **This question paper has SIX questions**
2. **Answer question ONE and any other THREE questions**

PLEASE TURN OVER

QUESTION ONE (40 MARKS) COMPULSORY

    (a) Explain the meaning of the following terms
    i.   Response time
    ii.   Streams
    iii.   Cache memory
    iv.   Real-time systems
    v.   Load balancing   (10mks)

    (b) Distinguish between the following giving an example of each
    i.   Sharable and non-sharable computer resource
    ii.   Absolute path specification and relative path specification
    iii.   True distributed system and network operating system
    iv.   Data migration and computation migration   (8mks)

    (c) Explain **five** factors to consider when choosing an operating system   (5mks)

    (d) Differentiate between independent and cooperating processes   (3mks)

    (e) Explain what each of the following batch file lines does when executed

```
@echo off
REM Usage: batchfilename
:start
Echo Hello
Goto :start
REM end of program                                        (6mks)
```

    (f) State the placement rule, benefit and limitation of best-fit placement algorithm in memory management   (3mks)

    (g) Use HRRN non preemptive scheduling algorithm scheme to determine the average waiting time for the following process   (5mks)

Process	Arrival Time	Service Time
P	0.0	4
Q	1.0	5
R	3.0	1

QUESTION TWO (20 MARKS) ELECTIVE

    (a) What is file integrity?   (2mks)

    (b) Explain three back up methods in achieving file integrity   (3mks)

   (c) Distinguish between logical and physical file organization   (2mks)

    (d) Describe continuous file allocation   (4mks)

(e) Discuss Block chaining, Index block chaining and Block oriented file mapping as in non-continuous file allocation policy giving at least one advantage and one disadvantage of each (9mks)

QUESTION THREE (20 MARKS) ELECTIVE
(a) Distinguish between
  i. swapping and paging
  ii. upper and lower memory (4mks)

(b) List **four** types of page swapping algorithms (2mks)

(c) With the aid of an illustration, describe a page table (4mks)

(d) The figure below shows used and free memory blocks at a given allocation time:

Last placement

OS										

8   12   22   18   6   8   14   36
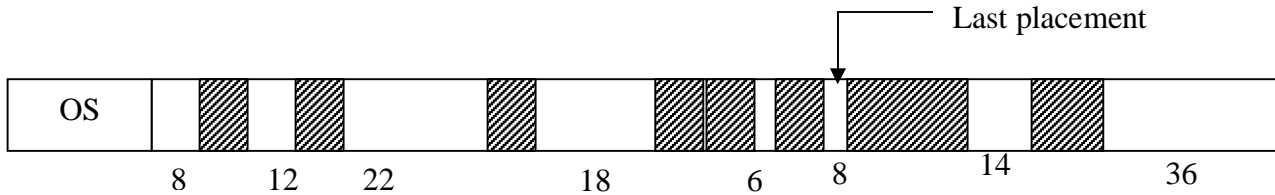
Locate the placement of 7mB followed by 13mB requests using the four dynamic placement algorithms if the last placement is the 8mB space as indicated in the diagram (10mks)

QUESTION FOUR (20 MARKS) ELECTIVE
(a) What do you understand by the term turnaround time (2mks)

(b) Identify and describe three types of process scheduling (9mks)

(h) Use FCFS, SRTN and $RR_{q=4}$ scheduling algorithms to determine the average waiting time for the following process (9mks)

Process	Arrival Time	Service Time
P1	0.0	7
P2	2.0	5
P3	3.0	2
P4	5.0	4

QUESTION FIVE (20 MARKS) ELECTIVE
(a) State the difference between A virus and a worm (3mks)

(b) List six characteristics of a good password (3mks)

(c) Describe Spooling stating its advantages and disadvantages (5mks)

(d) Describe three ways of maintaining system reliability (9mks)

QUESTION SIX (20 MARKS) ELECTIVE

    (a) What is meant by the term transparency in DS design issues? (2mks)

    (b) Explain five ways in which transparency is achieved in DS (10mks)

    (c) List four characteristics of a true distributed system (4mks)

    (d) Describe how process migration is achieved in DS (4mks)