

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 SYSTEM

STREAM: Y2S2

DAY: WEDNESDAY

TIME: 2.00 – 4.00 P.M.

DATE: 18/03/2009

INSTRUCTIONS:

Note: - Part-A is compulsory, has 20 marks and from Part-B, You can attempt any two questions. Each question has 15 marks.

PLEASE TURN OVER

Part-A

Question 1

- (a) What are the four desirable features of an operating system? Marks 2
- (b) Provide definitions for the following terms:
- (i) Program
 - (ii) Process
 - (iii) Multiprogramming
 - (iv) Time sharing Marks 2
- (c) What are the advantages of multiprogramming systems over non-multiprogramming systems? Marks 2
- (d) What is the distinction between user mode and kernel mode and why is this distinction necessary? Marks 2
- (e) In the round-robin scheduling, why can't you start new processes at the front of the queue instead of at the end? Marks 2
- (f) (I) What is DMA?
(II) How does it operate?
(III) Why is it good? Marks 1.5
- (g) Briefly describe the registry and its functions. Marks 2
- (h) What are the four main steps in executing a program instruction? Marks 2
- (i) What is a file system and why is it important for the proper functioning of an operating system? Mark 1
- (j) What are the two major ways in which an operating system improves upon a bare machine? Marks 2
- (k) In what ways do virtual machines differ from real machines? Marks 1.5

Question 2

- (a) How to evaluate scheduling algorithm? Explain any four issues of CPU scheduling. Marks 3
- (b) (I) What is spooling?
- (II) Why is a printer spooling system better than direct user access to printers? Marks 2
- (c) (I) Some CPUs cannot support paged virtual memory. Suggest a reason why this might be so. Marks 2
- (II) Do you know of a CPU that suffers from this problem? Mark 1

- (d) (I) What is First-Come-First-Served scheduling algorithm? Marks 2
- (II) Find out the *Gantt chart* and waiting time according to FCFS scheduling of the following. Marks 2
- (III) Also explain one advantage and disadvantage. Marks 2
- (IV) What is a *convoy effect*? Marks 1

Burst	Arrival Time	Burst Length
A	0	3
B	1	5
C	3	2
D	9	5
E	12	5

(All times are in milliseconds).

Question 3

- (a) Explain any three ways of indicating the type of file Marks 3
- (b) Explain any three access modes for operation on a file. Marks 3
- (c) (I) What do understand by file attributes?
 (II) Explain any four categories of file attributes? Marks 3
- (d) (I) What is a dead lock situation? Give an example. Mark 1
- (II) Write the algorithm to detect deadlock. Mark 1
- (III) What are the four conditions for deadlock? Marks 2
- (IV) Explain the prevention of any two conditions. Marks 2

Question 4

- (a) (I) Why do you need the memory management algorithms? Mark 1
(II) Explain any three key issues Marks 3
- (b) (I) What is MMU? Explain its work in computer system? Marks 2
(II) What is virtual and physical memory? Marks 2
- (c) (I) What disk head scheduling algorithms do you know, Explain any four. Marks 3
(II) What are the good points and bad points of each? Marks 2
- (d) Explain any one way to avoid external fragmentation. Marks 2

Question 5

- (a) (I) When do scheduling decisions take place? Marks 2
(II) When does CPU choose which process to run? Explain any four varieties of possibilities Marks 2
- (b) What are the four benefits of distributed system? Marks 2
- (c) Differentiate between the following:
(I) Batch and Interactive systems.
(II) Long and short term scheduling Marks 2
- (d) How to prevent priority inversions? Marks 2
- (e) How does system perform translation? Marks 2

(f) A north-south highway with two lanes of traffic, one traveling in each direction crosses a river at a bridge. There is only a single lane on the bridge. The bridge is long enough for there to be several cars on the bridge at the one time, provided that they are all traveling in the same direction. Write code to be performed when a car wishes to enter or exit the bridge, for vehicles traveling in each direction, using (a) semaphores, (b) monitors. Marks 2

(g) Write the syntax in DOS of the following.

(I) To create a file A in a directory B.

(II) Now delete the dir B if you are in B dir. Mark 1