



JA-3781

Third Year B. C. A. (Sem. V) Examination

March/April – 2012

504 : Operating System - II

Time : 3 Hours]

[Total Marks : 70

Instruction :

नीचे दशांकित निशानीवाणी विगतो उत्तरवही पर अवश्य कपवी.  
Fillup strictly the details of signs on your answer book.

Name of the Examination :  
T. Y. B. C. A. (Sem. 5)

Name of the Subject :  
504 : Operating System - 2

Subject Code No. : 3 7 8 1 Section No. (1, 2,.....) : NIL

Seat No. : [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Student's Signature

1 Answer in short : (any seven) 14

- (i) What is race condition ? How to avoid it ?
- (ii) What do you mean by co-operating process ?
- (iii) What is use of PMTBR, PMLTR registers ? What is difference between buffering and blocking ?
- (iv) What is difference between paging and segmentation ?
- (v) What is difference between first fit and best fit algorithms ? Which one is better ? And why ?
- (vi) What information needs to be saved when context switch takes place ?
- (vii) What are Access Control Lists ?
- (viii) What is dirty bit ?

2 Do as directed : 8+6=14

- (i) Explain with diagram. Indexed Allocation.
- (ii) Consider reference string given below :

1, 3, 4, 4, 3, 2, 1, 7, 5, 6, 4, 2, 1, 2, 4, 3, 2, 1

Show with diagram how many page faults occur in following replacements ? Consider the memory is empty initially, and memory having 4 page frames.

- (a) Optimal page replacement algorithm.
- (b) Least recently used page replacement algorithm.

OR

- (i) Explain multilevel feedback queue algorithm for process scheduling.
- (ii) List out 4 necessary conditions to occur for deadlock. Explain how can you prevent deadlock by breaking any one.

3 Write short notes : (any three)

- (i) Second Chance (SC) algorithm.
- (ii) Message passing system.
- (iii) Semaphore.
- (iv) Inverted Page Table.

4 Do as directed :

8+6=14

- (i) Consider the following set of process, with the length CPU-burst time given in milliseconds :

Process	Burst time	Priority
P1	3	1
P2	7	4
P3	5	2
P4	1	1
P5	4	3

The processes are assumed to have arrived in following order.

P1, P2, P3, P4, P5 all at time 0

- (a) Draw four Gantt Charts illustrating the execution of these process using
  - (i) FCFS scheduling
  - (ii) SJF scheduling
  - (iii) A non preemptive priority (a small priority number implies a higher priority) scheduling.
  - (iv) Round Robin (quantum = 1) scheduling.

- (b) What is the turn around time and waiting time of each process for each of the scheduling algorithm for (a) ?
- (c) Which of the schedules in part (a) results in minimum average waiting time (overall processes) ?
- (ii) Suppose a disk drive has 400 cylinders numbered from 0 to 399. Drive is currently serving the request at cylinder no. 150. The queue for pending request is as follows :
- 180, 65, 320, 93, 9, 390, 260, 40, 80, 220

What is the total distance that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms ?

- (i) FCFS
- (ii) SSTF
- (iii) SCAN
- (iv) C-LOOK.

5 Do as directed :

6+4=10

- (i) Discuss Peterson's solution for achieving the mutual exclusion. Also write the necessary code for implementing it.

OR

Write a note on inverted page title.

- (ii) Differentiate between static and dynamic memory allocation.

OR

If page fault occurs, how OS handles it ? Explain in brief.