



N-1484

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

October / November - 2011

Paper-504 : Operating System - II

Time : 3 Hours]

[Total Marks : 70

Instructions :

(1)

नीचे दशविव निशानीवाणी विगतो उत्तरवही पर अवश्य लपवी. Fillup strictly the details of signs on your answer book.	Seat No.:
Name of the Examination :	
T. Y. B. C. A. Sem. V	
Name of the Subject :	
Paper-504 : Operating System - II	
Subject Code No. : 1 4 8 4	Section No. (1, 2,.....) Nil
Student's Signature	

- (2) All questions are compulsory.
- (3) Figures to the right indicate full marks.
- (4) Draw figure and diagram wherever necessary.

1 Answer in short.

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- (i) What are the five major activities of an operating system in regard to process management ?
- (ii) What are Access control lists ?
- (iii) What is Dirty Bit ?
- (iv) What are the differences between a trap and an interrupt ?
- (v) What is starvation ? Difference between starvation and deadlock.
- (vi) What is pure demand paging ?
- (vii) Define principle of Locality.
- (viii) What are UP and DOWN operations of Semaphores ?

- 2 Do as directed : 8+6
- (i) Explain Hierarchical Page Table in detail.
  - (ii) Consider the reference string given below :  
8, 1, 2, 3, 1,4, 1, 5, 3, 4, 1, 4, 3, 2, 3, 1, 2, 8, 1, 2  
How many page faults will occur for the following replacement ? Consider the memory is empty initially and memory is having 3 frames.
    - (a) FIFO Page Replacement Algorithm
    - (b) Optimal Page Replacement Algorithm.

OR

- 2 Do as directed : 8+6
- (i) Discuss RR policy with its merits and demerits. What is the impact of the quantum of time slice on the system performance ? What criteria you should consider to decide the proper time scale ?
  - (ii) Explain Priority scheduling technique with various issues like aging in detail.

- 3 Do as Directed : 8+6
- (a) Suppose a disk drive has 400 cylinders numbered from 0 to 399. Drive is currently served the request at cylinder no 150. The queue for pending request in FIFO order is as follow :  
180, 65, 320, 93, 9, 390, 260, 40, 80, 220  
Show the Disk scheduling for the following algorithm.
    - (a) FCFS
    - (b) SSTF
    - (c) SCAN
    - (d) C-LOOK
  - (b) What is DMA ? Explain with diagram steps in DMA transfer.

OR

- (b) Explain critical section problem. Discuss the three requirements that must be satisfied to solve the critical section problem.

4 Write short note (any three)

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- (i) Fragmentation
- (ii) Classical problem of synchronization
- (iii) Relative Access file
- (iv) Steps in handle page faults

5 Do as directed (show the method)

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

Process	Burst Time	Priority
P1	4	4
P2	7	2
P3	9	5
P4	2	3
P5	4	1
P6	1	4

The process are assumed to have arrived in the order P1, P2, P3, P4, P5, P6 at all time 0.

- (a) Draw four Gantt charts illustrating the execution of these process using
  - (i) FCFS Scheduling
  - (ii) Round Robin Scheduling (quantum=1)
  - (iii) a non preemptive priority (a small priority number implies a higher priority) scheduling
- (b) What is the turn around time and waiting time of each process for each of the scheduling algorithm in part a.
- (c) Which of the schedules in part a results in minimum average waiting time (overall processes) ?
- (d) Justify if time quantum is too large in RR scheduling then it degenerates to FCFS policy.