## No. of Printed Pages : 4

MCS-041

## MCA (Revised)NoTerm-End Examination0December, 2011

## MCS-041 : OPERATING SYSTEMS

Τ	ïme	:	3	hours
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Maximum Marks : 100

- **Note :** Question No. 1 is compulsory. Attempt any three questions from the rest.
- (a) For the five given processes arriving at time 10
  0, in the order with the length of CPU time in milliseconds :

Process	Processing Time		
P1	10		
P2	28		
P3	32		
P4	7		

consider the FCFS, SJF and RR (time slice = 10 milliseconds) scheduling algorithms for the above set of process which algorithm would give the minimum average waiting time and minimum average turn around time ?

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- (b) Explain demand paging with the help of 5 suitable diagrams.
- (c) What is Belady's Anomaly ? In which page 5 replacement algorithm this anomaly occurs ? Explain with an example.
- (d) Explain file system is UNIX. Elaborate on 5 file and directory permissions in UNIX with examples.
- (e) What do you understand by disk 10 scheduling algorithms ? Explain and also calculate the total head movement for FCFS, SSTF and C-SCAN algorithms for the following block sequence :

90, 150, 21, 50, 68, 72, 151, 138.

Initially the head is at the cylinder number 50. Draw a suitable set of diagrams to illustrate the algorithm.

- (f) What is understood by the kernel of an 5OS ? What are the classification of an OSbased on the Kernel ?
- (a) Give a problem statement and a solution on 7 diner philosopher's problem.
  - (b) What is a safe sequence ? Explain Banker's Algorithm for the deadlock avoidance with example.

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- (c) What is thrashing ? How it is controlled using working set principle ?
- 3. (a) Differentiate between the following :- 3x2=6
  - (i) Master slave and symmetric multiprocessor OS systems.
  - (ii) Paging and segmentation.
  - (b) Give a security and protection model for a distributed and network operating system (one model each). Differentiate between the two suggested models.
  - (c) Explain the Bakery's Algorithm for critical 8 section problem for *n* number of processes.Give an example to illustrate the solution.
- 4. (a) What are race conditions ? How race 6 condition originates in an OS ?
  - (b) Give a short note on RPC Mechanism 6 (with example). Also suggest any two limitations of it.
  - (c) Differentiate between :

4x2=8

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- (i) Hypercube system and Crossbar system.
- (ii) Segmented paging and paged segmentation.

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5. (a) Give short notes on :

4x4=16

- (i) Pipes and filters in UNIX.
- (ii) CPU scheduling in a UNIX OS.
- (iii) Overlays.
- (iv) OPT Algorithm.
- (b) Differentiate between process and Threads **4** with share.