

06532

MCA (Revised)

Term-End Examination

June, 2010

MCS-041 : OPERATING SYSTEMS

Time : 3 hours

Maximum Marks :100

(Weightage : 75%)

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*Note : Question No. 1 is compulsory. Attempt any three questions from the rest.*

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1. (a) For the given five processes arriving at time 10 O, in the order of the length of CPU time in millisecond :

	<u>CPU time</u>
P1	8
P2	4
P3	6
P4	1
P5	5

Consider SJF and FCFS scheduling algorithms for the above processes; which algorithm of the two will give minimum Average Turn around time and why ?

- (b) A system contains 10 units of resource R1. 10  
 The resource requirement of 3 user processes  
 P1, P2, P3 can be summarised as :
- |                    | P1 | P2 | P3 |
|--------------------|----|----|----|
| Max. Requirement   | 7  | 4  | 5  |
| Current Allocation | 3  | 2  | 3  |
- Is the current allocation state feasible and  
 safe ? Apply Banker's Algorithm to check  
 it.  
 If a new request of (2, 1, 0) arises, check  
 whether it will be granted or not using  
 Banker's Algorithm ?
- (c) Explain what causes the thrashing ? Suggest 5  
 the mechanism to avoid the thrashing.
- (d) Discuss Lamport's Algorithm in distributed 7  
 system. Estimate the cost of communication  
 of Lamport's algorithm.
- (e) Compare and contrast the architecture of 8  
 WINDOWS OS with UNIX OS.
2. (a) What is a semaphore ? Give a solution to 10  
 'Readers - Writers' problem using  
 semaphore. Explain the steps.
- (b) Explain SCAN and LOOK disk scheduling 6  
 algorithm with suitable diagrams for the  
 given example.  
 Starting clinder is 100 in the direction of  
 increasing cylinder number. Cylinder  
 request :
- 150, 160, 184, 90, 58, 55, 39, 38, 18

- (c) How can we implement security and Reliability in Distributed Operating System ? 4
3. (a) Explain multistage switch based system in Multiprocess system. 6
- (b) With the help of diagrams, explain the concept of demand paging and demand segmentation. 4
- (c) For a page Reference string as : 10  
0, 1, 2, 6, 9, 4, 5, 0, 2, 6, 3, 8 and with 3 memory frames, calculate the no. of page faults using :  
(i) OPT  
(ii) LRU  
Page replacement algorithms.
4. (a) Explain the implementation of RPC in a distributed system. 5
- (b) Explain memory organisation in UNIX. Draw appropriate diagrams. 5
- (c) How is booting done in WINDOWS 2000 operating system ? Explain windows process and threads with the help of a suitable diagram. 10

5. (a) Explain Chaining and Indexing disk allocation schemes with the help of a suitable example. 10
- (b) Explain 'address translation' by direct mapping and associative mapping. 5
- (c) Discuss two alternative forms of authentication. 5
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