



[4658] – 163

Seat No.	
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T.E. (Information Technology) (Semester – I) Examination, 2014
OPERATING SYSTEM
(2008 Course)

Time : 3 Hours

Max. Marks : 100

- Instructions :** 1) Answers Question **1** or **2**, **3** or **4** and **5** or **6** from Section **I** and Question **7** or **8**, **9** or **10** and Q. **11** or Q. **12** from Section **II**.
2) Answers to the **two** Sections should be written in **separate** answer books.
3) **Neat** diagrams must be drawn **whenever** necessary.
4) Figures to the **right** indicate **full** marks.
5) Assume suitable data, if **necessary**.

SECTION – I

1. a) Explain the operating system as a User Interface. 9
b) What is Virtual Machine ? Explain the Virtual Machine Architecture. 9

OR

2. a) What is a shell in linux ? Explain following commands syntax with example in linux operating system. 9
i) grep
ii) head
iii) cut
iv) ls.
b) Explain any three architectures of Operating Systems. 9
3. a) State different reasons for the process creation and what steps performed by an OS in creation of the process ? 8
b) What is process control block ? Explain its role. 8

OR

4. a) Explain Unix Process State Transition diagram. 8
b) Consider following snapshot and apply FCFS, Pre-emptive SJF, Round Robin (Time Slice 4 Ms) to calculate avg waiting time. 8

Process	Arrival Time	Burst Time
1	0	8
2	1	4
3	2	9
4	3	5

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5. a) Explain the Banker's algorithm for deadlock avoidance with example. 8
 b) Write a semaphore solution for deadlock free dining philosopher problem explain it in detail. 8

OR

6. a) Explain hardware support for mutual exclusion. 8
 b) What is binary and general semaphore ? Give definition of general semaphore and binary semaphore primitives. 8

SECTION – II

7. a) Consider the following reference string. 9
 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1
 Apply FIFO, LRU and optimal algorithm and calculate number of page fault occurred in each case. Number of free frames are 3.
 b) Explain the combined paging and segmentation scheme with its address translation mechanism. 9

OR

8. a) Describe the fixed and dynamic partitioning with their strength and weakness. 6
 b) Explain following terms : 6
 i) Internal fragmentation
 ii) External fragmentation
 iii) Compaction.
 c) What is Belady's anomaly ? Explain it with suitable example. 6
 9. a) What are the different buffering ways in I/O buffering ? 8
 b) What are different disk performance parameters ? Explain each in detail. 8

OR

10. a) Explain different operations of files. 6
 b) Explain the file sharing with its access rights. How file is accessed simultaneously ? 10
 11. a) Explain how the access matrix can be implemented effectively. 8
 b) What is the difference between a threat and an attack ? Explain with example. 8

OR

12. a) Explain Unix Password Scheme in detail. 8
 b) Explain techniques and security policies to improve the resistance to threats. 8

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