



II B.Tech II Sem Regular End Examination, August 2021

OPERATING SYSTEMS**(CSE & IT)****Time: 3 Hours.****Max. Marks: 70**

Note: 1. Answer any FIVE questions.

2. Each question carries 14 marks and may have a, b as sub questions.

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| 1 | a) | List and explain the different operating system services. | 7M | C01 | L4 |
| | b) | Explain the layered approach of designing the OS. | 7M | C01 | L4 |
| 2 | a) | What do you mean by system calls? Explain its use with suitable example. | 7M | C01 | L4 |
| | b) | Explain the concept of time sharing in OS. | 7M | C01 | L4 |
| 3 | a) | What is meant by preemptive and nonpreemptive scheduling algorithms? Explain RR scheduling and effect of quantum size on its performance. | 7M | C02 | L4 |
| | b) | Consider the following four processes represented as (Process, Burst Time, Priority) with the length of CPU burst in milliseconds. {(P1, 5, 3), (P2, 10, 1), (P3, 3, 3), (P4, 5, 4), (P5, 1, 2) }. The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at time 0. Using nonpreemptive priority scheduling (a smaller priority number implies a higher priority) | 7M | C02 | L3 |
| | | i) Draw Gantt chart. ii) Calculate average waiting time. | | | |
| 4 | a) | Explain the multithreaded models for user and kernel threads. | 7M | C02 | L4 |
| | b) | Explain in detail the Banker's algorithm with suitable example. | 7M | C03 | L4 |
| 5 | a) | What is safe state and unsafe state? Discuss about the deadlock avoidance. | 7M | C03 | L2 |
| | b) | What are the requirements for a solution to a critical section problem? Explain Peterson's solution to the critical section problem. | 7M | C03 | L2 |
| 6 | a) | On a simple paging system with 2^{20} bytes of physical memory, 512 pages of logical address space and a page size of 2^8 bytes | 7M | C04 | L3 |
| | | i) How many bits are in a logical address? | | | |
| | | ii) How many bits are in a physical address? | | | |
| | | iii) How many entries are in the page table (How long is the page table)? | | | |
| | | iv) How many bits are needed to store an entry in the page table? | | | |
| | b) | Explain the following techniques for structuring the page table in detail. i) Hierarchical paging ii) Inverted page table | 7M | C04 | L4 |

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| 7 | a) | Explain the concept of demand paging in detail. | 7M | C04 | L4 |
| | b) | Explain the usage of lseek system call. | 7M | C05 | L4 |
| 8 | a) | Explain the schemes of defining the logical structure of the directory system. | 7M | C05 | L4 |
| | b) | Discuss various types of file allocation methods. | 7M | C05 | L2 |

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