**20CS/CB/DS/CM/IT304**

**Hall Ticket Number:**

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| **II/IV B.Tech (Regular/Supplementary) DEGREE EXAMINATION** | | | |
| **January, 2024** | **Common to CS, CB, DS, CM &IT** | | |
| **Third Semester** | **Operating Systems**   |  | | --- | |  | | | |
| **Time:** Three Hours | | **Maximum:7**0 Marks | |
| *Answer Question No.1 compulsorily.* | | | (14X1 = 14 Marks) |
| *Answer ONE question from each unit.* | | | (4X14=56 Marks) |
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| 1. | a) | | Give the advantages of Multiprocessor Systems. | CO1 | 1M |
|  | b) | | What are Operating system Services? | CO1 | 1M |
|  | c) | | Write about Priority Scheduling. | CO1 | 1M |
|  | d) | | What is Critical Section problem? | CO2 | 1M |
|  | e) | | Define mutual exclusion in deadlock prevention. | CO2 | 1M |
|  | f) | | Define semaphore. | CO2 | 1M |
|  | g) | | List classic problems of Synchronization. | CO2 | 1M |
|  | h) | | What do you mean by Swapping? | CO3 | 1M |
|  | i) | | What is Starvation in deadlock? | CO3 | 1M |
|  | j) | | Define thrashing. | CO3 | 1M |
|  | k) | | Define internal fragmentation. | CO3 | 1M |
|  | l) | | What are the common attributes of a file? | CO4 | 1M |
|  | m) | | List out file access methods. | CO4 | 1M |
|  | n) | | Define RAID. | CO4 | 1M |
| **Unit - I** | | | | | |
| 2. | a) | Define system call. Explain about system call with an example. | | CO1 | 7M |
|  | b) | Define process. Explain about process state diagram. | | CO1 | 7M |
| **(OR)** | | | | | |
| 3. | a) | |  | | --- | | Explain about Multithreading models. | | | CO1 | 7M |
|  | b) | Explain Inter Process Communication | | CO1 | 7M |
| **Unit - II** | | | | | |
| 4. | a) | Describe the Readers-Writers Problem. Find the solution for Readers-Writers Problem using Semaphores concept. | | CO2 | 7M |
|  | b) | Explain in detail the Priority CPU Scheduling algorithm. | | CO2 | 7M |
| **(OR)** | | | | | |
| 5. | a) | Compare the First-Come - First-Serve CPU Scheduling, Shortest-Job-First CPU Scheduling algorithms with an example. | | CO2 | 7M |
|  | b) | Discuss about Mutex Locks. | | CO2 | 7M |
| **Unit - III** | | | | | |
| 6. | a) | What are the necessary conditions for deadlock? How can you detect a deadlock when each resource is having single instance? | | CO3 | 7M |
|  | b) | Describe demand paging with the steps to handle a page fault in it | | CO3 | 7M |
| **(OR)** | | | | | |
| 7. | a) | Consider the following page reference string; 0 1 5 3 0 1 4 0 1 5 3 4. Find the number of page faults using FIFO, optimal and LRU page replacement algorithms, Assuming three frames and initially all frames are empty. | | CO3 | 7M |
|  | b) | |  | | --- | | Describe Deadlock prevention. | | | CO3 | 7M |
| **Unit - IV** | | | | | |
| 8. | a) | Write short notes on FCFS disk scheduling with example. | | CO4 | 7M |
|  | b) | Demonstrate the process of Implementation of Access Matrix | | CO4 | 7M |
| **(OR)** | | | | | |
| 9. | a) | Discuss various directory structures in detail. | | CO4 | 7M |
|  | b) | Explain about file allocation methods. | | CO4 | 7M |

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