



**SIDDHARTH GROUP OF INSTITUTIONS: PUTTUR  
(AUTONOMOUS)**

Siddharth Nagar, Narayanavanam Road – 517583

**QUESTION BANK (DESCRIPTIVE)**

**Subject with Code:** Operating System(20MC9103)

**Course & Branch:** M.C.A

**Year & Sem:** I- M.C.A & I - Sem

**Regulation:** R20

**UNIT – I**

**Operating System Overview & Operating System Structure**

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|----|--|-----------|-------|
| 1  | a) What are the objectives of operating systems?                         | [L1][CO1] | [6M]  |
|    | b) Explain about the functions of operating system.                      | [L2][CO1] | [6M]  |
| 2  | Illustrate different services provided by operating systems.             | [L3][CO1] | [12M] |
| 3  | a) Define system calls.  | [L5][CO2] | [2M]  |
|    | b) Discuss various types of system calls.                                | [L2][CO2] | [10M] |
| 4  | a) Define Operating System? Mention what are the goals of an OS.         | [L1][CO1] | [4M]  |
|    | b) Explain the history of Operating Systems.                             | [L1][CO1] | [8M]  |
| 5  | Write a short note on Evolution of Operating Systems.                    | [L6][CO6] | [12M] |
| 6  | a) Write a short note on Computer System Architecture.                   | [L6][CO1] | [6M]  |
|    | b) Write about OS structure.   | [L6][CO4] | [6M]  |
| 7  | What are the system programs and explain in detail?                      | [L1][CO1] | [12M] |
| 8  | a) Explain about operating system structure.                             | [L2][CO1] | [6M]  |
|    | b) Explain about operating system operations.                            | [L2][CO1] | [6M]  |
| 9  | Write a brief description on Operating System Design and Implementation. | [L6][CO6] | [12M] |
| 10 | Explain the following.   | [L2][CO2] | [6M]  |
|    | a) System Calls  | [L2][CO2] | [6M]  |
|    | b) System Programs   |           |       |

**UNIT – II****Process Management, CPU Scheduling and Process Coordination**

- 1 a) Define process state. [L5][CO2] [4M]  
 b) Explain different process state with neat diagram. [L2][CO2] [8M]
- 2 Write short note on [L6][CO2] [12M]  
 i) Process control block ii) context switch and iii) dispatcher.
- 3 What is a thread? Discuss about thread scheduling. [L1][CO4] [12M]
- 4 Discuss the following. [L6][CO4] [6M]  
 a) FCFS CPU scheduling algorithm in detail. [L6][CO4] [6M]  
 b) SJF CPU scheduling algorithm in detail.
- 5 a) What is meant by process synchronization? [L1][CO2] [4M]  
 b) Discuss in detail about classic problems of synchronization. [L2][CO2] [8M]
- 6 a) Compute the average waiting time for the processes using non-preemptive SJF scheduling algorithm. [L3][CO2] [6M]

Process	ArrivalTime	BurstTime
P1	0	7
P2	2	4
P3	4	1
P4	5	4
P5	3	4

- b) Give below Processes table, calculate the average waiting time for the algorithms: First Come First Serve (FCFS) [L4][CO2] [6M]

Process	ArrivalTime	BurstTime
P1	0	7
P2	2	4
P3	4	1
P4	5	4
P5	3	4

- 7 a) What is Semaphore and explain in detail. [L1][CO2] [6M]  
 b) How the monitors are used in process synchronization? [L2][CO2] [6M]
- 8 a) Explain in detail about scheduling queues. [L2][CO2] [6M]  
 b) How the Schedulers are assigned in CPU scheduling. [L5][CO2] [6M]
- 9 Explain multiple processor scheduling and thread scheduling. [L2][CO2] [12M]
- 10 a) Explain about preemptive scheduling. [L2][CO2] [6M]  
 b) Discuss about scheduling criteria in detail [L2][CO2] [6M]

**UNIT – III**  
**Memory Management & Virtual Memory**

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|-----------|--|----------------------------------|
| <b>1</b>  | Write short note on the following.<br>a) Contiguous Allocation<br>b) Swapping  | [L6][CO3] [6M]<br>[L6][CO3] [6M] |
| <b>2</b>  | Explain the paging memory management technique in detail.  | [L2][CO3] [12M]                  |
| <b>3</b>  | Write a brief description on<br>i) Logical & Physical Address Space<br>ii) Contiguous Allocation.  | [L6][CO3] [12M]                  |
| <b>4</b>  | Explain about the structure of the page table.   | [L2][CO4] [12M]                  |
| <b>5</b>  | a) Write a brief description on Segmentation with Paging.<br>b) Briefly explain about demand paging.   | [L6][CO4] [6M]<br>[L2][CO3] [6M] |
| <b>6</b>  | Write a short note on Page Replacement Algorithms.   | [L6][CO4] [12M]                  |
| <b>7</b>  | Briefly explain segmentation and paging in operating system.   | [L2][CO4] [12M]                  |
| <b>8</b>  | a) Consider the following reference string<br>7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. Assume there are three frames. Apply FIFO replacement algorithm to the reference string above and find out how many page faults are produced.<br>b) Explain about allocation of Frames. | [L5][CO4] [6M]<br>[L2][CO3] [6M] |
| <b>9</b>  | Write a brief description on techniques used for structuring the page table .  | [L6][CO4] [12M]                  |
| <b>10</b> | a) Elaborate the content of Thrashing.<br>b) Given page reference string: 1,2,3,2,1,5,2,1,6,2,5,6,3,1,3,6,1,2,4,3. Compare the number of page faults for LRU and Optimal page replacement algorithm.   | [L2][CO3] [6M]<br>[L2][CO3] [6M] |

**UNIT – IV**  
**Mass Storage Structure & File System Interface**

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|-----------|--|----------------------------------|
| <b>1</b>  | a) Discuss about mass storage structure.<br>b) Explain about disk structure in detail. | [L2][CO4] [6M]<br>[L2][CO4] [6M] |
| <b>2</b>  | Discuss about disk scheduling and disk attachment in detail.                           | [L6][CO4] [12M]                  |
| <b>3</b>  | Explain about RAID structure in detail.  | [L2][CO4] [12M]                  |
| <b>4</b>  | a) How do you use stable storage?<br>b) Explain tertiary storage structure in detail.  | [L2][CO4] [6M]<br>[L2][CO4] [6M] |
| <b>5</b>  | Define file. Explain the different file accessing methods.                             | [L5][CO5] [12M]                  |
| <b>6</b>  | Explain file and directory structure.  | [L2][CO4] [12M]                  |
| <b>7</b>  | a) Briefly discuss about file sharing.<br>b) Explain about protection in file sharing. | [L2][CO4] [6M]<br>[L2][CO4] [6M] |
| <b>8</b>  | Explain file system allocation methods.  | [L2][CO4] [12M]                  |
| <b>9</b>  | Discuss on directory implementation.   | [L6][CO4] [12M]                  |
| <b>10</b> | Discuss about free space management.   | [L6][CO3] [12M]                  |

**UNIT – V**  
**Deadlocks & Protection**

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|-----------|---|-----------|--------------|
| <b>1</b>  | <b>a)</b> What is deadlock with clear example?                                | [L1][CO5] | <b>[4M]</b>  |
|           | <b>b)</b> Explain methods for handling deadlocks.                             | [L2][CO5] | <b>[8M]</b>  |
| <b>2</b>  | <b>a)</b> What are the necessary conditions of a deadlock? Explain in detail. | [L1][CO2] | <b>[6M]</b>  |
|           | <b>b)</b> Briefly discuss about firewalling to protect systems and networks.  | [L2][CO5] | <b>[6M]</b>  |
| <b>3</b>  | <b>a)</b> Write short notes on resource allocation graph.                     | [L6][CO3] | <b>[6M]</b>  |
|           | <b>b)</b> How to avoid the deadlock when it was happened.                     | [L2][CO5] | <b>[6M]</b>  |
| <b>4</b>  | Explain deadlock prevention method with example.                              | [L2][CO2] | <b>[12M]</b> |
| <b>5</b>  | Explain banker's algorithm for deadlock avoidance.                            | [L2][CO2] | <b>[12M]</b> |
| <b>6</b>  | Discuss about deadlock detection and recovery technique.                      | [L6][CO2] | <b>[12M]</b> |
| <b>7</b>  | How can you explain the cryptography as a security tool?                      | [L2][CO5] | <b>[12M]</b> |
| <b>8</b>  | Discuss the goals of protection and principles of protection in detail.       | [L6][CO5] | <b>[12M]</b> |
| <b>9</b>  | Write about domain protection and Principles of Protection.                   | [L6][CO5] | <b>[12M]</b> |
| <b>10</b> | <b>a)</b> Explain about language based protection.                            | [L2][CO5] | <b>[6M]</b>  |
|           | <b>b)</b> How can you identify the program threats? Explain briefly?          | [L2][CO5] | <b>[6M]</b>  |

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