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| LOGO.jpg | **GEETHANJALI INSTITUTE OF SCIENCE & TECHNOLOGY**  (**AN AUTONOMOUS INSTITUTION**)  **(Approved by AICTE, New Delhi & Affiliated to JNTUA, Ananthapuramu)**  **(Accredited by NAAC with “A” Grade, NBA (EEE,ECE &ME) & ISO9001:2008CertifiedInstitution)** |
| **QUESTIONBANK(DESCRIPTIVE)**  **Subject Name with Code: OPERATING SYSTEMS (23A0511T)**  **Course & Branch: B.TECH & CSE(DS) Year& Semester: III-I**  **Regulation: RG23** | |

**UNIT - I**

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| **S.No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | Define the term 'Operating Environment'. | L1/CO1/2M |
|  | List two advantages of using an Operating System. | L1/CO1/2M |
|  | What is the role of the kernel in an OS? | L2/CO1/2M |
|  | Differentiate between batch OS and interactive OS. | L2/CO1/2M |
|  | What is meant by multitasking in operating systems? | L1/CO1/2M |
|  | List any two examples of open-source operating systems. | L1/CO1/2M |
|  | Define system utilities. | L1/CO1/2M |
|  | What is the role of a shell in an operating system? | L1/CO1/2M |
|  | List different categories of system calls. | L2/CO1/2M |
|  | What is a device driver in OS? | L2/CO1/2M |
| **Descriptive Questions (Long)** | | |
|  | Discuss the evolution of operating systems from batch to modern OS. | L2/CO1/10M |
|  | Explain the main components of an operating system with a neat diagram. | L2/CO1/10M |
|  | Describe various types of user interfaces with examples. | L2/CO1/10M |
|  | Explain the purpose and types of system calls in detail. | L2/CO1/10M |
|  | Discuss the design and implementation issues of operating systems. | L2/CO1/10M |
|  | Describe the different computing environments supported by modern OS. | L2/CO1/10M |
|  | Explain the significance of open-source operating systems with examples. | L2/CO1/10M |
|  | Write about the structure and functions of the kernel. | L2/CO1/10M |

**UNIT - II**

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| **S.No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | What is process state? | L2/CO2/2M |
|  | Define process scheduling. | L2/CO2/2M |
|  | What is the function of a process control block (PCB)? | L1/CO2/2M |
|  | Define multithreading. | L1/CO2/2M |
|  | List two threading models. | L2/CO2/2M |
|  | What is context switching? | L1/CO3/2M |
|  | List two types of CPU schedulers. | L1/C02/2M |
|  | What is starvation in CPU scheduling? | L2/CO3/2M |
|  | Define race condition. | L2/CO3/2M |
|  | What is the purpose of semaphores in IPC? | L2/CO3/2M |
| **Descriptive Questions (Long)** | | |
|  | Explain the different states of a process with a state transition diagram. | L2/CO2/10M |
|  | Discuss the role and contents of a process control block. | L2/CO2/10M |
|  | Explain multithreading models with suitable examples. | L2/CO2/10M |
|  | Describe various CPU scheduling algorithms with examples. | L2/CO2/10M |
|  | Explain the concept of context switching with an example. | L2/CO2/10M |
|  | Discuss different types of inter-process communication mechanisms. | L3/CO3/10M |
|  | Solve an example problem using the Round Robin scheduling algorithm. | L3/CO3/10M |
|  | Compare preemptive and non-preemptive scheduling with examples. | L2/CO3/10M |

**UNIT – III**

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| **S.No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | Define swapping in memory management. | L2/CO4/2M |
|  | What is contiguous memory allocation? | L1/CO4/2M |
|  | Define paging. | L2/CO4/2M |
|  | What is segmentation in memory management? | L2/CO4/2M |
|  | What is demand paging? | L1/CO4/2M |
|  | Define copy-on-write. | L1/CO4/2M |
|  | What is thrashing in virtual memory? | L2/CO4/2M |
|  | List two types of page replacement algorithms. | L1/CO4/2M |
|  | What is memory mapping? | L2/CO4/2M |
|  | Define frame allocation. | L1/CO4/2M |
| **Descriptive Questions (Long)** | | |
|  | Explain contiguous and non-contiguous memory allocation methods. | L2/CO4/10M |
|  | Discuss the concept of paging with a neat diagram. | L2/CO4/10M |
|  | Describe segmentation and its advantages. | L2/CO4/10M |
|  | Explain the working of demand paging with an example. | L2/CO4/10M |
|  | Discuss various page replacement algorithms with examples. | L2/CO4/10M |
|  | Explain thrashing and ways to prevent it. | L2/CO4/10M |
|  | Solve a numerical problem on FIFO and LRU page replacement algorithms. | L2/CO4/10M |
|  | Explain memory-mapped files and their uses. | L2/CO4/10M |
|  | Explain contiguous and non-contiguous memory allocation methods. | L2/CO4/10M |

**UNIT - IV**

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| **S.No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | Define deadlock. | L4/CO5/2M |
|  | What is mutual exclusion? | L2/CO5/2M |
|  | List the four conditions for deadlock. | L1/CO5/2M |
|  | What is a safe state in deadlock avoidance? | L2/CO5/2M |
|  | Define resource allocation graph. | L2/CO5/2M |
|  | What is the ostrich algorithm? | L2/CO5/2M |
|  | Define disk scheduling. | L2/CO5/2M |
|  | List any two file access methods. | L1/CO5/2M |
|  | What is RAID in storage systems? | L1/CO5/2M |
|  | Define stable storage. | L1/CO5/2M |
| **Descriptive Questions (Long)** | | |
|  | Explain deadlock prevention techniques. | L2/CO5/10M |
|  | Describe deadlock avoidance using Banker’s algorithm. | L2/CO5/10M |
|  | Discuss deadlock detection and recovery methods. | L2/CO5/10M |
|  | Explain file allocation methods in detail. | L4/CO5/10M |
|  | Discuss free space management in file systems. | L2/CO5/10M |
|  | Explain different types of directory structures. | L2/CO5/10M |
|  | Describe RAID levels and their advantages. | L2/CO5/10M |
|  | Explain disk scheduling algorithms with examples. | L2/CO5/10M |
|  | Explain deadlock prevention techniques. | L4/CO5/10M |

**UNIT - V**

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| **S.No.** | **Question** | **[BT Level] [CO][ Marks]** |
| **2 Marks Questions (Short)** | | |
|  | What is system protection? | L1/CO6/2M |
|  | Define access control list. | L1/CO6/2M |
|  | What are the principles of protection? | L1/CO6/2M |
|  | What is an access matrix? | L2/CO6/2M |
|  | Define user authentication. | L2/CO6/2M |
|  | List two types of program threats. | L2/CO6/2M |
|  | What is encryption in computer security? | L2/CO6/2M |
|  | Define firewall. | L2/CO6/2M |
|  | What is cryptography? | L1/CO6/2M |
|  | List two goals of system security. | L2/CO6/2M |
| **Descriptive Questions (Long)** | | |
|  | Discuss the goals and principles of protection in operating systems. | L2/CO6/10M |
|  | Explain the working of an access matrix with a diagram. | L2/CO6/10M |
|  | Describe various authentication mechanisms used in OS security. | L2/CO6/10M |
|  | Discuss common program threats and their prevention methods. | L2/CO6/10M |
|  | Explain cryptography techniques used for securing systems. | L2/CO6/10M |
|  | Describe firewall types and their functions. | L2/CO6/10M |
|  | Discuss security measures for protecting operating systems and networks. | L2/CO6/10M |
|  | Explain system security classification with examples. | L2/CO6/10M |

**Signature of the Staff:**

**Signature of Department Academic Committee Member 1:**

**Signature of Department Academic Committee Member 2:**

**Signature of Department Academic Committee Member 3:**