**DHANEKULA INSTITUTE OF ENGINEERING & TECHNOLOGY**

**GANGURU: VIJAYAWADA – 521 139**

**External Exam Question Paper Quality Analysis**

Name of the Program : B.Tech in Computer Science & Engineering Academic Year: 2023-24

Year & Semester: II Year I Semester Section: A, B, C No of Credits : 03

Name of the Course: Operating Systems Code : R20C203

Course: Core Regulation : R20

Course Area/Module: No of students registered: 70, 69, 70

Name of the Faculty : Mrs. N. Srilakshmi, Mrs. L.N.B Jyostna Designation: Asst. Professor

**SET-I**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S No** | **Name of Exam** | **Q NO** | **Assessment question** | **Connected CO** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | External | a) | What are various operating system functions and explain. | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | Describe the open-Source operating System. | Understanding (L2) | 1 | 1,2 |  |  |
| 2 | a) | Show the diagrammatic representation of Operating system structure | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | Define what is a system call? List and explain why system call required. | Understanding (L2) | 1 | 1,2 |  |  |
| 3 | a) | Define the process. What is various process scheduling algorithms? Explain. | R20C203.2 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 |  |  |  |
| b) | What is threading? Describe the Multithreading models. | Applying (L3) | 1 | 1,2 |  |  |
| 4 |  | a) | Define Race condition, Critical Regions Mutex and Monitors. | R20C203.2 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Explain the how communication will happen in client server systems. | Applying (L3) | 1 | 1,2 |  |  |
| 5 | a) | What are different memory management Strategies. Explain briefly. | R20C203.3 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Define the technique of Virtual Memory. Describe briefly Demand paging. | Applying (L3) | 1 | 1,2 |  |  |
| 6 | a) | Explain Paging and segmentation with examples. | R20C203.3 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Describe with examples the page replacement algorithms | Applying (L3) |  |  |  |  |
| 7 |  | a) | What are necessary conditions to happen the Deadlock in the system. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
|  |  | b) | What is banker’s algorithm and explain? When this algorithm will run in the system. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 8. |  | a) | Briefly explain Deadlock detection and recovery and deadlock prevention | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
|  |  | b) | What is the purpose of disc scheduling algorithms? Distinguish between SCAN and LOOK Algorithms with suitable examples. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 9. |  | a) | What are various Goals and Principles of protection? Describe with examples. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
|  |  | b) | Define System Security and program and network threats. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
| 10. |  | a) | Explain Briefly how Cryptography ensure security. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
|  |  | b) | Explain about Access matrix, Access control and access rights. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |

**SET-II**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S No** | **Name of Exam** | **Q NO** | **Assessment question** | **Connected CO** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | External | a) | Define the purpose of operating system. What are operating systems operations? | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | What are various operating system services? Explain the System Boot. | Understanding (L2) | 1 | 1,2 |  |  |
| 2 | a) | Explain various Operating System functions and Interface. | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | Define the system call. What various system calls and explain. | Understanding (L2) | 1 | 1,2 |  |  |
| 3 | a) | Describe with a an example the inter-Process communication. | R20C203.2 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | What is a thread? Explain with examples multithreaded Programming. | Applying (L3) | 1 | 1,2 |  |  |
| 4 |  | a) | Define the Thread Library and describe thread scheduling. | R20C203.2 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Explain with examples Race Condition, Critical Section, and Dining philosophers’ problem. | Applying (L3 | 1 | 1,2 |  |  |
| 5 | a) | Describe with examples the Contiguous memory allocation and Swapping. | R20C203.3 | Applying (L3) | 1  1 | 1,2 | Remembering (L1) | 1 | 1,2 |  |  |
| b) | Discuss the concept of page replacement technique in the Memory Management with implementation techniques. | Applying (L3) | 1 | 1,2 |  |  |
| 6 | a) | What is page fault? Discuss how to handle it. Discuss Segmentation mechanism. | R20C203.3 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Explain the terms with examples Demand paging, Frame allocation and Thrashing. | Applying (L3) | 1 | 1,2 |  |  |
| 7 |  | a) | Describe the deadlock detection and recovery with an example. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
|  |  | b) | Explain briefly the secondary Structure and RAID. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 8. |  | a) | Discuss the necessary conditions for occurring resource deadlocks. Explain the single resource and process deadlock as an example. | R20C203.4 | Applying (L3) | 1 | 1,2 | Analyzing(L4) | 1 | 1,2 |  |  |
|  |  | b) | Explain the terms Deadlock avoidance and prevention. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 9. |  | a) | What are the different principles of domain protection? Explain with an example | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
|  |  | b) | Discuss the overview of Linux operating system. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
| 10. |  | a) | What are program threats and network threats? How the Cryptography helps the system security? | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
|  |  | b) | Discuss the goals for the protection of the System. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |

**SET-III**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S No** | **Name of Exam** | **Q NO** | **Assessment question** | **Connected CO** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | External | a) | What are the services provided by the operating system? Explain briefly. | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | Briefly explain types of System calls. | Understanding (L2) | 1 | 1,2 |  |  |
| 2 | a) | Discuss with help of a neat diagram the structure of Operating System. | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | What is debugging? Explain the need of operating system debugging and system boot. | Understanding (L2) | 1 | 1,2 |  |  |
| 3 | a) | Illustrate about FCFS and Shortest Job First algorithms with suitable examples. | R20C203.2 | Applying (L3) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | Discuss the concepts of Critical section, Mutual exclusion, Sleep and wakeup. | Analyzing(L4) | 1 | 1,2 |  |  |
| 4 |  | a) | Differentiate between Inter-process communication and Client server communication. | R20C203.2 | Applying (L3) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | Discuss the Message passing system and Readers and writers problem. | Analyzing(L4) | 1 | 1,2 |  |  |
| 5 | a) | Why Swapping is used in Memory-Management Strategies. Write various advantages of paging and Segmentation. | R20C203.3 | Applying (L3) | 1  1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | When thrashing happens in the system. What are the various disadvantages of thrashing? | Applying (L3) | 1 | 1,2 |  |  |
| 6 | a) | What are various Memory-Management Strategies. Discuss contiguous memory allocation and segmentation. | R20C203.3 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | What is the demand paging. Discuss any three page replacement algorithms. | Applying (L3) | 1 | 1,2 |  |  |
| 7 |  | a) | Describe the Ostrich algorithm with an example. Briefly explain with an example the Deadlock detection and recovery. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
|  |  | b) | What are various Disk scheduling algorithms, Explain any Three algorithms. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 8. |  | a) | What are various necessary and sufficient conditions to occur a deadlock? Explain. What is the purpose of Bankers algorithm? Write it. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
|  |  | b) | Explain with a neat diagram the disk structure and discuss the following Disk scheduling algorithms. (i) FCFS (ii) Shortest Seek-time First | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 9. |  | a) | What is user authentication? Illustrate the importance of user authentication with suitable example | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Applying (L3) | 2 | 1,2 |  |  |
|  |  | b) | Discuss the concept of Cryptography for security. Explain about security defenses. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
| 10. |  | a) | Write short notes on Access matrix, Access control and access rights. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing  (L4) | 2 | 1,2 |  |  |
|  |  | b) | Write the importance of firewall in protecting system and Networks. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing  (L4) | 2 | 1,2 |  |  |

**SET-IV**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **S No** | **Name of Exam** | **Q NO** | **Assessment question** | **Connected CO** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | External | a) | What are various operating system functions and operations? Discuss. | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | Discuss briefly operating-system Interface and system calls. | Analyzing(L4) | 1 | 1,2 |  |  |
| 2 | a) | Discuss operating system structure and computing environment. . | R20C203.1 | Understanding (L2) | 1 | 1,2 | Understanding (L2) | 1 | 1,2 |  |  |
| b) | What are system programs and application programs? Define system Boot. | Understanding (L2) | 1 | 1,2 |  |  |
| 3 | a) | What is process scheduling? Discuss short term scheduling and long term short scheduling schemes. | R20C203.2 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | What is an IPC? Discuss some of classical IPC problems with examples. | Applying (L3) | 1 | 1,2 |  |  |
| 4 |  | a) | Define a thread in operating system. What are various Multithreaded models and discuss. | R20C203.2 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Discuss the concept of inter-process communication and various issues and concepts. | Applying (L3) | 1 | 1,2 |  |  |
| 5 | a) | Differentiate constant partition and variable partition techniques. | R20C203.3 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Discuss page replacement algorithms in memory management. | Analyzing(L4) | 1 | 1,2 |  |  |
| 6 | a) | Differentiate between contiguous memory allocation and paging. | R20C203.3 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| b) | Write short notes on Memory-mapped files and kernel memory allocation. | Applying (L3) | 1 | 1,2 |  |  |
| 7 |  | a) | What is a deadlock? When do deadlocks occur? Discuss the methods of detecting a deadlock and recovering from deadlock. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
|  |  | b) | Write a short note on disk structure and RAID structure. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 8. |  | a) | What are the different conditions for deadlock occurrence? Explain. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
|  |  | b) | Write a short note on implementation of file system and its optimization. | R20C203.4 | Applying (L3) | 1 | 1,2 | Applying (L3) | 1 | 1,2 |  |  |
| 9. |  | a) | What is system protection. Discuss goals and principles of protection. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing (L4) | 2 | 1,2 |  |  |
|  |  | b) | Differentiate the security defenses and firewall. . | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
| 10. |  | a) | Write a short note on Access matrix and Revocation of access rights. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |
|  |  | b) | Discuss various concepts of Microsoft Windows. | R20C203.5 | Analyzing(L4) | 2 | 1,2 | Analyzing(L4) | 2 | 1,2 |  |  |

Signature of course coordinator Signature of the HOD

Date Date