**DHANEKULA INSTITUTE OF ENGINEERING & TECHNOLOGY**

**GANGURU::VIJAYAWADA – 521 139**

**Question Quality Analysis-Pre Examination-PHASE\_ I**

Name of the Program : B.Tech in Computer Science & Engineering Year &Semester: II-I Academic Year: 2023-2024

Name of the Course: Operating Systems Course Code: R20C203 Name of the Faculty: Mr. K. Srikanth

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| **SNO** | **CO NO** | **Assessment question** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | R20C203.1 | Explain in detail about the interrelation between various services provided by the operating system with a neat sketch. | Understanding (L2) | 1 | 1 | BTL 2 Understanding | 1 | 1 |  |  |
| 2 | Discuss the Operating system structure with neat diagrams. | BTL 2 Understanding | 1 | 1 |  |  |
| 3 | Explain about Storage management with neat diagram? | BTL 2 Understanding | 1 | 1 |  |  |
| 4 | Define system call and list out different system calls. | BTL1  Knowledge | 1 | 1 |  |  |
| 5 | Explain about Open source operating systems in detail?. | BTL 2 Understanding | 1 | 1 |  |  |
| 6 | Explain about any 3 computing Environments in detail? | BTL 2 Understanding | 1 | 1 |  |  |
|  | Explain about Open source operating systems in detail?. | BTL 2 Understanding | 1 | 1 |  |  |
| 7 | R20C203.2 | Define Process State & Explain in detail about the Proces States? | Understanding (L2) | 1 | 1,2 | BTL1  Knowledge | 1 | 1,2 |  |  |
| 8 | Explain about the Importance of process Scheduling Algorithms? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 9 | Describe different Operations on Process in detail? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 10 | Explain about Inter process Communication with an example? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 11 | Explain about Multi threaded Environment and mention the Advantages? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 12 | Explain about Producer - Consumer Problem using Semaphores? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 13 | What is critical section problem? Write and explain Peterson’s solution for it? |
| 14 | Explain about Reader -Writer Problem ? |
| 15 | R20C203.3 | Explain about paging with an Example? | Applying(L3) | 1 | 1,2 | BTL 2 Understanding | 1 | 1,2 |  |  |
| 16 | Define Contiguous memory allocation ? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 17 | Explain about Swapping ? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 18 | Explain about segmentation with an Example? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 19 | Differentiate paging with segmentation | BTL 2 Understanding | 1 | 1,2 |  |  |
| 20 | Calculate effective memory access time, Consider a single level paging scheme with a TLB. Assume no page  fault occurs. It takes 20 ns to search the TLB and 100 ns to access the physical  memory. If TLB hit ratio is 80%. | BTL 3  Apply | 1 | 1,2 |  |  |

Signature of course coordinator Assessment committee coordinator HOD

Date Date

**DHANEKULA INSTITUTE OF ENGINEERING & TECHNOLOGY**

**GANGURU::VIJAYAWADA – 521 139**

**Question Quality Analysis-Post Examination-PHASE\_ I**

Name of the Program : B.Tech in Computer Science & Engineering Year &Semester: II-I Academic Year: 2023-2024

Name of the Course: Operating Systems Course Code: R20C203 Name of the Faculty: N.Srilakshmi,K.Srikanth

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| **SNO** | **CO NO** | **Assessment question** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | R20C203.1 | Explain in detail about the interrelation between various services provided by the operating system with a neat sketch. | Understanding (L2) | 1 | 1 | BTL 2 Understanding | 1 | 1,2 |  |  |
| 2 | Write the difference between the function and system call. Briefly explain major categories of system calls | BTL 2 Understanding | 1 | 1,2 |  |  |
| 3 | List out and discuss the Operating system structure with neat diagrams | BTL 2 Understanding | 1 | 1,2 |  |  |
| 4 | Define the essential properties of the following types of operating systems:i) Batch ii) Interactive iii) Time sharingiv) Real time v) Parallelvi) Distributed | BTL1  Knowledge | 1 | 1,2 |  |  |
| 5 | Explain about Storage management with neat diagram? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 6 | List out Operating system Operations in detail? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 7 | Define system call and list out different system calls. | BTL1  Knowledge | 1 | 1,2 |  |  |
| 8 | Explain about Open source operating systems in detail?. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 9 | Explain about any 3 computing Environments in detail? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 10 |  | Explain Operating System Structures and Operating System Debugging with necessary example. |  | 1 | 1,2 | BTL 2 Understanding | 1 | 1,2 |  |  |
| 11 | R20C203.2 | What is critical section problem? Write and explain Peterson’s solution for it | BTL 2 Understanding | 1 | 1,2 |  |  |
| 12 | How to prevent necessary and sufficient conditions of deadlock? Explain | BTL 2 Understanding | 1 | 1,2 |  |  |
| 1 | Consider the following four processes represented as (Process, Arrival Time, Burst Time) with the length of CPU burst in milliseconds. { ( P1, 0, 10), (P2, 1, 7), (P3, 2, 13), (P4, 3, 11) }. Using preemptive SJF scheduling: i) Draw Gantt chart. ii) Calculate average waiting time | BTL1  Knowledge | 1 | 1,2 |  |  |
| 2 | a)Explain the usage and structure of monitors with an example  b)Define short-term, medium-term, and long-term scheduling. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 3 | Explain different process states with neat sketch.  b)Explain how multiprogramming increases the utilization of CPU | BTL 2 Understanding | 1 | 1,2 |  |  |
| 4 | Explain the Round Robin scheduling algorithm with a suitable example. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 5 | a) Define dead locks with example.  b) Discuss how the following pairs of scheduling criteria conflict in a certain settings. i) CPU utilization and response time, ii) Average turnaround time and maximumwaiting time, and iii) I/O device utilization and CPU utilization. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 6 | Explain about Priority Scheduling algorithm with an Example | BTL 2 Understanding | 1 | 1,2 |  |  |
| 7 | a) Define process and Process Control Block ? b)Explain about Process Synchronization in detail | BTL 2 Understanding | 1 | 1,2 |
|  | Analyze the concept of communication in client server systems with example and Dining philosophers problem with example | BTL 2 Understanding | 1 | 1,2 |
| 1 | R20C203.3 | Explain about paging with an Example? | Applying(L3) | 1 | 1,2 | BTL 2 Understanding | 1 | 1,2 |  |  |
| 2 | Define Contiguous memory allocation ? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 3 | Explain about Swapping ? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 4 | a) What is System boot?  b) Define Semaphores and Monitors with examples?  c) Explain Memory Management with example. | BTL 2 Understanding | 1 | 1,2 |  |  |

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**DHANEKULA INSTITUTE OF ENGINEERING & TECHNOLOGY**

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**Question Quality Analysis-Pre Examination-PHASE\_I**

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

Name of the Course: Operating Systems Course Code: R20C203 Name of the Faculty: Mr. K. Srikanth

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| **SNO** | **CO NO** | **Assessment question** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | R20C203.3 | Explain about Page Replacement Algorithms? | Applying (L3) | 1 | 1,2 | BTL 2 Understanding | 1 | 1,2 |  |  |
| 2 | Explain in detail about Thrashing ? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 3 | Explain the process of converting virtual addresses to physical addresses with a neat diagram. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 4 | Solve the following page reference string 2,3,4,5,3,2,6,7,3,2,3,4,1,7,  1,4,3,2,3,4,7. Calculate the number of page faults with LRU, FIFO and optimal page replacement algorithms with frame size of 3. | BTL 3  Applying | 1 | 1,2 |  |  |
| 5 | Discuss in detail the file allocation techniques: Sequential, Indexed and Linked | BTL 2 Understanding | 1 | 1,2 |  |  |
| 6 | R20C203.4 | Interpret following deadlock avoidance algorithms:  i) Banker’s algorithm ii) Safety algorithm. | Applying (L3) | 1 | 1,2 | BTL 2 Understanding | 1 | 1,2 |  |  |
| 7 | Explain different File Attributes and File Operations | BTL 2 Understanding | 1 | 1,2 |  |  |
| 8 | Explain and compare the FCFS and SSTF disk scheduling algorithms. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 9 | Explain the structure of disk with a neat diagram. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 10 | Explain about various issues involved in selecting appropriate disk scheduling algorithm?. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 11 | What is a deadlock? Explain the necessary condition for deadlock. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 12 | Illustrate different RAID structures. | BTL 3  Applying | 1 | 1,2 |  |  |
| 13 | R20C203.5 | What are the advantages and disadvantages of recording the name of the creating program with the file's attributes? Explain in detail. | Analyzing (L4) | 2 | 1,2 | BTL 2 Understanding | 2 | 1,2 |  |  |
| 14 | Define Access Matrix and Explain Implementation of Access Matrix? | BTL 2 Understanding | 2 | 1,2 |  |  |
| 15 | Explain about System Security Threats and attacks in detail? | BTL 2 Understanding | 2 | 1,2 |  |  |
| 16 | Explain about use of Cryptography in Computing? | BTL 2 Understanding | 2 | 1,2 |  |  |
| 17 | Describe Various Counter measures to Security attacks? | BTL 2 Understanding | 2 | 1,2 |  |  |
| 18 | Explain about the firewalls with an Example? | BTL 2 Understanding | 2 | 1,2 |  |  |

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**DHANEKULA INSTITUTE OF ENGINEERING & TECHNOLOGY**

**GANGURU::VIJAYAWADA – 521 139**

**Question Quality Analysis-Pre Examination-PHASE\_II**

Name of the Program : B.Tech in Computer Science & Engineering Year &Semester: II-I Academic Year: 2022-23

Name of the Course: Operating Systems Course Code: R20C203 Name of the Faculty: Mr. K. Srikanth

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| **SNO** | **CO NO** | **Assessment question** | **BTL**  **of CO** | **CO Related to** | | **BTL of Question** | **Question related to** | | **Quality**  **of Question**  **YES/NO** | **Remarks** |
| **POs** | **PSOs** | **POs** | **PSOs** |
| 1 | R20C203.3 | Explain about Demand Paging with example? | Applying  (L3) | 1 | 1,2 | BTL 2 Understanding | 1 | 1,2 |  |  |
| 2 | Explain Segmentation with example? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 3 | Discuss Page Replacement Algorithims with examples. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 4 | R20C203.4 | Solve the following snapshot of a system:  **Processes Max. Allocation Available**  **A B C D A B C D A B C D**  P0 0 0 1 3 0 0 1 2 1 5 2 0  P1 1 7 6 0 1 0 0 0  P2 2 4 5 6 1 4 5 4  P3 0 6 5 2 0 6 3 0  P4 0 8 5 6 0 0 1 4  Answer the following questions using the banker’s algorithm:  a. What is the content of the matrix Need?  b. Is the system in a safe state? | Applying  (L3) | 1 | 1,2 | Applying  (L3) | 1 | 1,2 |  |  |
| 5 | Define resource allocation graph? Draw an example resource allocation graph which shows the  deadlock and explain the necessary conditions | BTL 2 Understanding | 1 | 1,2 |  |  |
| 6 | Explain in detail about file attributes, operations, types. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 7 | Explain Banker's deadlock-avoidance algorithm with an illustration and example . | BTL 2 Understanding | 1 | 1,2 |  |  |
| 8 | Define deadlock and Explain about Deadlock Recovery Algorithm? | BTL 2 Understanding | 1 | 1,2 |  |  |
| 9 | What is a directory? Explain in detail about implementation of directory. | BTL 2 Understanding | 1 | 1,2 |  |  |
| 10 | R20C203.5 | What is meant by Access Matrix? Explain in detail about Access Matrix? | Analyzing (L4) | 2 | 1,2 | BTL 2 Understanding | 2 | 1,2 |  |  |
| 11 | Explain about Different types of Threats in detail? | BTL 2 Understanding | 2 | 1,2 |  |  |
| 12 | Explain about Cryptography and different tools for authentication? | BTL 2 Understanding | 2 | 1,2 |  |  |
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