Hall Ticket No.:

SRIT R19

SRINIVASA RAMANUJAN INSTITUTE OF TECHNOLOGY
(AUTONOMOUS)
III B. Tech I Sem – Semester End Examinations – Regular – Feb 2022
OPERATING SYSTEMS
[194GA05503]
(Computer Science & Engineering)

Time: 3 hours   **Max. Marks: 70**

PART-A
(Compulsory Question)
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1   Answer the following: (10 X 02 = 20 Marks)
   a)   What is a system call?
   b)   Define distributed system.
   c)   Differentiate process and program.
   d)   Define race condition.
   e)   What is demand paging?
   f)   Define thrashing.
   g)   List the types of files.
   h)   What is rotational latency?
   i)   Define system threat.
   j)   What is access matrix?

PART-B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT-1
2   a)   Explain the operations of an operating system.   **[5M]**
    b)   Discuss the various services provided by an operating system.   **[5M]**
                                          (OR)
3   a)   Explain the procedure for handling of a user application invoking the open( ) system call   **[5M]**
         with neat diagram.
    b)   List and explain process control and device management system calls.   **[5M]**

UNIT-2
4   a)   Construct the Gantt Chart for i) Shortest job first ii) Round Robin with q=3 Algorithms   **[5M]**
         for the following.

Process	P1	P2	P3	P4	P5
CPU Burst Time (in ms)	1	6	2	8	5

    b)   Explain about critical section problem with a suitable example.   **[5M]**
                                          (OR)
5   a)   Explain Petersons solutions for critical section problem.   **[5M]**
    b)   Discuss in detail about message passing systems.   **[5M]**

UNIT-3
6   a)   What are the necessary conditions for a deadlock to arise in a system? Explain.   **[5M]**
    b)   A system has 3 devices D1, D2 and D3 & 3 processes P1, P2, and P3. P1 is holding D1   **[5M]**
         and waiting for D3. P2 is holding D2 and waiting for D1. P3 is holding D3 and waiting
         for D2. Draw resource allocation graph and wait-for graph. Is the system in deadlock
         state or not? Explain.
                                          (OR)

7   a) A Process refers to five Pages, A, B, C, D, and E in the order- A; B; C; D; A; B; E; A; B; **[5M]**
        C; D; E. If the page replacement algorithm is FIFO, calculate the number of page faults
        with empty frames of size 3.

    b) Calculate the number of page faults with empty frames of size 4 using LRU for the above   **[5M]**
        pages.

UNIT-4

8   a) Explain about the following: **[5M]**
            i) File Attributes   ii) File Operations
    b) Explain in detail about file system structure.   **[5M]**

(OR)

9   a) Explain the different types of directory structures.   **[5M]**
    b) Explain RAID structure.   **[5M]**

UNIT-5

10 a) How can the access matrix be implemented effectively? Explain.   **[5M]**
    b) Discuss about revocation of access rights.   **[5M]**

(OR)

11 a) Explain the following: **[5M]**
            i) Goals of protection
            ii) Principle of protection
    b) Discuss in detail about cryptography as a security tool.   **[5M]**

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