



# MARRI LAXMAN REDDY INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

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II B.Tech II Sem Supply End Examination, July 2022

## Operating Systems

(CSE & IT)

Time: 3 Hours.

Max. Marks: 70

Note: 1. Question paper consists: Part-A and Part-B.

2. In Part – A, answer all questions which carries 20 marks.

3. In Part – B, answer any one question from each unit.

Each question carries 10 marks and may have a, b as sub questions.

### PART- A

(10\*2 Marks = 20 Marks)

- |       |  |    |     |     |
|-------|--|----|-----|-----|
| 1. a) | Define Operating System. List the objectives of an operating system              | 2M | C01 | BL1 |
| b)    | What is the difference between simple batch system and time sharing system?      | 2M | C01 | BL1 |
| c)    | With a neat diagram, list various states of a process                            | 2M | C02 | BL1 |
| d)    | Differentiate between seek time and rotational latency.                          | 2M | C02 | BL2 |
| e)    | What are the various ways of aborting a process in order to eliminate deadlocks? | 2M | C03 | BL1 |
| f)    | Define semaphore and its types?  | 2M | C03 | BL1 |
| g)    | Differentiate between External and Internal Fragmentation                        | 2M | C04 | BL2 |
| h)    | Define the terms a) swapping b) paging   | 2M | C04 | BL1 |
| i)    | Define the term file. List various attributes of a file.                         | 2M | C05 | BL1 |
| j)    | Discuss the file access methods  | 2M | C05 | BL2 |

### PART- B

(10\*5 Marks = 50 Marks)

- |           |  |     |     |     |
|-----------|--|-----|-----|-----|
| 2         | What is a System call? Explain in detail the system call sequence to copy the contents of one file to another file.            | 10M | C01 | BL4 |
| <b>OR</b> |  |     |     |     |
| 3         | “Operating system is resource manager”-Justify this statement with suitable functionality of OS.                               | 10M | C01 | BL4 |
| 4         | Explain the following system calls:<br>a) Fork b) exit c) wait d) waitpid e) exec  | 10M | C02 | BL1 |
| <b>OR</b> |  |     |     |     |
| 5         | What are the advantages of inter-process communication? How communication takes place in a shared-memory environment? Explain. | 10M | C02 | BL4 |

- |           |   |     |     |     |
|-----------|---|-----|-----|-----|
| 6         | Explain the Resource-Allocation-Graph algorithm for deadlock avoidance.   | 10M | C03 | BL4 |
| <b>OR</b> |   |     |     |     |
| 7         | What is a Critical Section problem? Give the conditions that a solution to the critical section problem must satisfy. | 10M | C03 | BL1 |
| 8         | Define Virtual Memory. Explain the process of converting virtual addresses to physical addresses with a neat diagram. | 10M | C04 | BL4 |
| <b>OR</b> |   |     |     |     |
| 9         | Explain the concept of demand paging in detail with neat diagrams   | 10M | C04 | BL4 |
| 10        | Discuss the different file allocation methods with suitable example.  | 5M  | C05 | BL2 |
| <b>OR</b> |   |     |     |     |
| 11        | Briefly explain about single-level, two-level and Tree-Structured directories.  | 10M | C05 | BL4 |

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