

1C8112

Roll No.

Total No. of Pages: 4

1C8112

MCA I- Sem. (Main / Back) Exam., -2025

MCA-103 Operating System

Time: 3 Hours

Maximum Marks: 70
Min Passing Marks: 28

Instructions to Candidates:

Attempt all Ten questions from Part A. All five questions from Part B and three questions out of five from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL

2. NIL

PART – A

[10×2=20]

(Word limit 25)

- ✓ Q.1 Define preemptive scheduling algorithms.
- ✓ Q.2 Define time sharing system.
- ✓ Q.3 What is semaphore?
- ✓ Q.4 Define thrashing.
- ✓ Q.5 What is Kernel?
- ✓ Q.6 What is a system call?
- Q.7 What is prototyping?

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Q.8 Define meta characters.

Q.9 Define bootstrapping.

Q.10 What is the init process?

PART – B

[5×4=20]

(Word limit 100)

Q.1 Consider the following set of processes, with the length of CPU burst time given in milliseconds:

Process	Arrival Time	Burst Time	Priority
P1	0	4	2
P2	2	5	1
P3	5	7	3
P4	6	6	4

Draw Gantt Chart for shortest job first algorithm and priority based preemptive algorithm and also, compute turnaround time for every process.

Q.2 Consider the following page reference string:

1, 2, 3, 1, 2, 5, 3, 4, 6, 7, 7, 1, 0, 0, 4, 2, 0, 1, 7

How many page faults will occur with LRU and optimal page replacement algorithms assuming four frames? All four frames are initially empty.

Q.3 Explain following Linux commands:

(a) ls (b) cat (c) grep (d) echo (e) df

Q.4 Write shell script for reading 'n' and generate a pattern given below:

1
12
123
1234
12345

Q.5 Discuss common Linux distributions with key properties.

PART – C

[3×10=30]

(Attempt any three questions)

- ✓ Q.1 Discuss types of the operating system based on the functionalities with advantages and limitations.
 - ✓ Q.2 Discuss necessary conditions for deadlock with proper examples.
 - Q.3 Discuss Linux architecture with proper diagram.
 - ✓ Q.4 Discuss various types of shell available in Linux.
 - ✗ Q.5 Define following with their uses:
(a) Boot Loaders (b) LILO (c) GRUB
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