

CBCS SCHEME

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20MCA12

First Semester MCA Degree Examination, Jan./Feb. 2023 Operating System with UNIX

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. What is Operating System? Explain with a neat diagram the components of computer system. (08 Marks)
- b. Write short notes on:
- Distributed system
 - Clustered system
 - Real time system
 - Virtual machine.
- (12 Marks)

OR

- 2 a. What is process, process state and Process Control Block (PCB)? Describe the contents of PCB. (10 Marks)
- b. Consider the following set of processes with given length of CPU burst. Draw Gantt chart for SJF (Preemptive) and SJF (Non-Preemptive). Find the average waiting time, for each scheduling algorithm. (10 Marks)

Processes	P ₁	P ₂	P ₃	P ₄	P ₅
Burst time	6	2	8	3	4
Arrival time	2	5	1	0	4

Module-2

- 3 a. With a neat diagram, explain resource allocation graph and wait for graph. (10 Marks)
- b. Explain the deadlock detection algorithms for several instances of a resource. (10 Marks)

OR

- 4 a. What is deadlock? Explain the necessary conditions for its occurrence. (10 Marks)
- b. Explain swapping with a neat diagram. (10 Marks)

Module-3

- 5 a. With a neat diagram, explain the architecture of UNIX OS. (10 Marks)
- b. Explain who, uname, date, cal, echo commands with example. (10 Marks)

OR

- 6 a. Explain pwd, mkdir, rmdir, cd commands with examples. (10 Marks)
- b. Create a script file called file properties that reads a filename entered and output its properties. Explain positional parameters. (10 Marks)

Important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-4

- 7 a. Explain the various options of P5 command with example. (10 Marks)
b. Explain internal and external commands with suitable example. (10 Marks)

OR

- 8 a. Explain different forms of 'if' statement used in shell with example. (10 Marks)
b. Differentiate while and until loops. Give suitable examples. (10 Marks)

Module-5

- 9 a. Write an awk script to compute gross salary of an employee according to rule given below.
If basic salary < 10000 then
hra = 15% of basic and da = 45% of basic.
If basic salary > 10,000 then
hra = 20% of basic and da = 50% of basic. (10 Marks)
- b. Demonstrate logical and relational operators in awk with suitable examples. (10 Marks)

OR

- 10 a. Write a awk script to delete duplicate lines from a text file. The order of the original lines must remain unchanged. (10 Marks)
b. With an example explain if and for control structures in awk. (10 Marks)
