



Third Semester B.C.A. Degree Examination, April 2021
(Choice Based Credit System)
(2020-2021 Batch Onwards)
OPERATING SYSTEMS AND LINUX

Time : 3 Hours

Max. Marks : 80

Note : Answer **any ten** questions from Part – A and **one full** question from **each** Unit of Part – B.

PART – A

1. a) What is an Operating System ? (10×2=20)
b) Define time sharing processing system.
c) Distinguish program and process.
d) Define deadlock.
e) List the difference between page and frame.
f) What is virtual memory ? Why is it needed ?
g) Differentiate free software and freeware software.
h) Name the different file system types used in Linux.
i) What is the use of backup files ?
j) Mention any two file oriented commands in Linux.
k) What is the purpose of shift commands in Linux ?
l) Specify the purpose of cut command in Linux.

PART – B

Unit – I

2. a) Explain the process management and memory management components of operating system.
b) Explain the life cycle of the process with a neat diagram.
c) What is a critical section ? Name the requirements for solution to the critical section problem. (6+4+5)

P.T.O.



3. a) Explain the different services provided by the OS.
 b) Explain the concept of semaphores with pseudo code for wait and signal.
 c) Consider the following set of processes that arrive at time 0 with the length of the CPU-burst time given in milliseconds.

Process	CPU Burst Time
P1	6
P2	8
P3	7
P4	3

Draw Gantt chart and find the average waiting time using SJF scheduling.

(5+5+5)

Unit – II

4. a) What is demand paging ? Explain.
 b) Consider a system with 12 magnetic tape drives and three processes, P0, P1, P2. Let the maximum needs and allocation at a certain time be as follows :

Max	Needs	Currently allocated
P0	10	5
P1	4	2
P2	9	2

Find a safe sequence.

- c) Consider the reference string 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1. For memory with three frames, find the number of page faults for FIFO and LRU algorithms. (5+4+6)
5. a) Explain resource-allocation graph with an example.
 b) Explain FIFO, Optimal Page Replacement Algorithm and LRU algorithm.
 c) Explain the methods used to recover from deadlock. (5+6+4)



Unit – III

- 6. a) Give the structure of Linux file system. Explain with example.
- b) Write a short note on Linux Kernel.
- c) How can we create files and folders in Linux ? (5+5+5)

- 7. a) Write a note on powers of an administrator in Linux OS.
- b) Write a note on Linux distributions.
- c) Define and explain the features of Linux. (5+5+5)

Unit – IV

- 8. a) Write a note on positional parameters.
 - b) Explain the following commands :
 - a) sort
 - b) wc
 - c) dd.
 - c) Explain the *case* statement in Linux with syntax and example. (5+6+4)

 - 9. a) Explain any five directory oriented commands available in Linux.
 - b) What are the different types of file permissions ? Explain how they can be changed using the *chmod* command.
 - c) Write a note on *vi* editor. (5+6+4)
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