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**BSCCSC 281**

**Choice Based Credit System IV Semester B.Sc. Degree Examination,  
September 2022  
COMPUTER SCIENCE  
OPERATING SYSTEMS AND LINUX  
(2020 – 21 Batch Onwards)**

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

(10×2=20)

1. a) What is multiprogrammed system ?
- b) What is a thread ? Give their types.
- c) What is real time system ? Give their types.
- d) What is ready queue and device queue ?
- e) Define waiting time.
- f) What is semaphore ?
- g) Define logical and physical address.
- h) What is race condition ?
- i) What is virtual memory ? Why is it needed ?
- j) Give the meaning and syntax of grep command.
- k) Explain the difference between mv and rm in Linux.
- l) Explain the pwd command.

PART – B

**Unit – I**

2. a) Write a note on process management.
- b) Write a note on PCB and explain the main parts.
- c) Explain inter-process communication.

(5+5+5)

P.T.O.



3. a) Explain main memory management and secondary storage management.  
b) Differentiate between kernel level and user level threads.  
c) Explain the process state diagram. **(5+5+5)**

**Unit – II**

4. a) Explain the different scheduling criteria for cpu scheduling algorithm.  
b) Explain necessary conditions for a deadlock to occur.  
c) What is readers-writer problem ? Explain. **(5+5+5)**
5. a) Consider the following set of processes, with length of the cpu-burst time given in milliseconds.

<b>Process</b>	<b>Burst time</b>
P1	15
P2	4
P3	10
P4	8
P5	5

Draw Gantt chart using round robin with time quantum of 5 milliseconds and find average waiting time.

- b) What is critical section ? What are the requirement for a solution to critical section problem ?  
c) Explain how to recover from deadlock. **(5+5+5)**

**Unit – III**

6. a) Write a note on memory compaction.  
b) Explain FIFO page replacement policy.  
c) Explain general file structure in Linux. **(5+5+5)**



7. a) Explain segmentation with a neat diagram.
- b) Mention the different types of directory structures. Explain any one.
- 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 3 frames, give the steps in the FIFO page replacement algorithm. **(5+5+5)**

### **Unit – IV**

8. a) Give the syntax of if statement and explain with an example.
- b) Explain the following commands with example :
- i) sort
  - ii) cut.
- c) Write a shell script to print first 'n' Fibonacci numbers. **(5+5+5)**
9. a) What are the features of Linux OS ?
- b) Explain the relational operators used in Linux operating system.
- c) Write a shell script to accept a number and find its sum of digits and reverse. **(5+5+5)**
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