

Roll No. : .....

Total No. of Questions : 11 ]

[ Total No. of Printed Pages : 4

# **BPMS-526**

**M.Sc. (Previous) Examination, 2023**

**COMPUTER SCIENCE**

Paper - MCS-104

**(Operating Systems)**

*Time : 3 Hours ]*

*[ Maximum Marks : 50*

**Section-A**

**(Marks : 2 × 10 = 20)**

*Note :-* Answer all *ten* questions (Answer limit **50** words). Each question carries **2** marks.

**Section-B**

**(Marks : 3 × 5 = 15)**

*Note :-* Answer all *five* questions. Each question has internal choice (Answer limit **200** words). Each question carries **3** marks.

**Section-C**

**(Marks : 5 × 3 = 15)**

*Note :-* Answer any *three* questions out of five (Answer limit **500** words). Each question carries **5** marks.

**Section-A**

1. (i) What do you mean by context switch in process scheduling ?
- (ii) What is the main difference between a thread and process ?

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**BPMS-526** P.T.O.

- (iii) Define Turnaround time in your words.
- (iv) What do you understand by Gantt Chart ?
- (v) What do you mean by Semaphores ?
- (vi) What is the critical section part in reader's writer's problem ?
- (vii) Write one major benefit of paging.
- (viii) Name root level directory in Linux and write the symbol/notation used for that top level directory.
- (ix) Write the command to delete an empty directory in Linux.
- (x) Write the command to see the calendar for April month of 2023.

**Section-B**

2. Explain the transition from one state to another using the diagram for process states.

*Or*

Explain the working of system calls.

3. Find the average turnaround time for the following table in case of First come, First served. Process arrives in the order  $P_1$ ,  $P_2$ ,  $P_3$  and  $P_4$  :

Process	Burst Time
$P_1$	3
$P_2$	1
$P_3$	13
$P_4$	2

*Or*

Take a suitable example to explain the differences between the preemptive and non-preemptive various of shortest job first.

4. Explain the matrices used for different purposes in Banker's algorithm.

*Or*

What are the requirements for a solution to the critical section problem ?

5. Write the steps for installation of Linux in dual boot mode.

*Or*

Explain the advantages and disadvantages of segmentation.

6. Write a shell script to count the even numbers from a list of numbers entered by the user.

*Or*

Write a shell script to find the cube of a number entered by the user.

### **Section-C**

7. Explain the concept of PCB using the block diagram with different parts of the PCB.
8. Using Round Robin scheduling, find the average waiting time and average response time for the following case :

<b>Process</b>	<b>Arrival Time</b>	<b>Burst Time</b>
P <sub>1</sub>	0	3
P <sub>2</sub>	1	2
P <sub>3</sub>	2	7

9. Discuss the recovery techniques from deadlock in detail.
10. Consider page reference string 1, 3, 0, 3, 5, 6, 3 with 3 page frames. Find the number of page faults.
11. (a) Write a shell script to print first 10 natural numbers using while loop.  
(b) Write the usage of the following commands :
  - (i) read
  - (ii) expr
  - (iii) apt
  - (iv) chmod
  - (v) mv