

- (b) Explain the Mutual exclusion. 4
- (c) Define swap space and demand paging. 4
- (d) Define the structure of UNIX OS. 3

Roll No. ....

Total Pages : 04

**Sep-21-00071**

**B. Tech. EXAMINATION, 2021**

Semester IV (CBCS)

OPERATING SYSTEM (CSE, IT)

CS-402

*Time : 2 Hours*

*Maximum Marks : 60*

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*The candidates shall limit their answers precisely within 20 pages only (A4 size sheets/assignment sheets), no extra sheet allowed. The candidates should write only on one side of the page and the back side of the page should remain blank. Only blue ball pen is admissible.*

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**Note :** Attempt *Four* questions in all, selecting *one* question from any of the Sections A, B, C and D.  
Q. No. 9 is compulsory.

**Section A**

1. Explain the different kernels and its structure. 15
2. Explain the evolution of Operating systems and define software layers. 15

### Section B

3. Define concurrent process.

Perform Process Scheduling, evaluate Average Waiting time and Average Turnaround time using (follow both pre-emptive and non-pre-emptive procedure) :

Process	Burst Time	Arrival Time	Priority
P1	16	2	3
P2	12	0	1
P3	18	1	5
P4	13	6	2
P5	12	4	1

- (a) SJF  
(b) FCFS  
(c) Priority Scheduling. 15

4. Define the various deadlock detection and recovery schemes. 15

### Section C

5. Consider the following page reference string :  
7, 2, 3, 1, 2, 5, 3, 4, 6, 7, 7, 1, 0, 5, 4, 6, 2, 3, 0, 1

Assuming demand paging with three frames, how many page faults would occur for the following replacement algorithms ?

- (a) LRU  
(b) FIFO  
(c) Optimal. 15

6. If memory partition of 100 k, 500 k, 200 k, 300 k and 600 k (in order) are given here would each of the first fit, best fit and (in order) ? Which algorithm makes the most efficient use of memory ? 15

### Section D

7. What are different types of Security attacks possible in OS and different security mechanisms ? 15  
8. Explain virtualization. How is it achieved in OS ? Explain the different concepts to virtualization in network and server. 15

### (Compulsory Question)

9. Explain the following :  
(a) Define Starvation. 4