44672/C0220

Reg. No. | | | | | | | | | |

III Semester B.C.A. 5 (CBCS) Degree Examination, April - 2023

OPERATING SYSTEM

O.S.Concepts by Silberschatz Galvin

(Repeaters)

Time : 3 Hours **Maximum Marks : 80**

Instructions to Candidates :

1. *Answer the questions of all 3 sections as per the instructions.*
2. *Draw **diagrams** wherever necessary.*

SECTION - A

Answer any **TEN** questions, 2 marks each. **(10×2=20)**

1. a) What is multiprogramming?
   b) List any four services of an operating system.
   c) What are co-operating processes.
   d) What is turn around time?
   e) What do you mean by SJF?
   f) What is critical section?
   g) Define Deadlock.
   h) What is logical address?
   i) What is page fault?
   j) Mention the different file operations.
   k) What is thrashing?
   l) What is OTP?

SECTION - B

Answer any **FOUR** questions, 5 marks each. **(4×5=20)**

2. Explain multiprogramming with time sharing concept.
3. Explain the states of a process with neat diagram.
4. Explain Round Robin scheduling algorithm with an example.
5. Explain SCAN method of disk scheduling.
6. Explain paging with an example.
7. Explain how to prevent deadlock process.

[P.T.O.

SECTION - C

Answer any **FOUR** of the following, **10** marks each. **(4×10=40)**

8. Consider the following set of processes with CPU burst time given in milliseconds.

Process	**Burst time (in ms)**
P_1	24
P_2	03
P_3	03

* Draw two Gantt charts illustrating the execution of these processes using FCFS and SJF scheduling.
* Calculate average waiting and average turn around time in each case. **(4+6)**

9. Consider a system with 5 processes P_0 through P_4 and three resource types A,B,C. Resource type A has 10 instances, resource type B has 5 instances, and resource type C has 7 instances. The following shapshot of the system has been taken.

	Allocation			**Max**		
	A	B	C	A	B	C
P_0	0	1	0	7	5	3
P_1	2	0	0	3	2	2
P_2	3	0	2	9	0	2
P_3	2	1	1	2	2	2
P_4	0	0	2	4	3	3

Using Banker's algorithm answer the following :

1. What is the content of available matrix?
2. What is the content of need matrix?
3. Find the safe sequence, if the system is in a safe state. **(2+2+6)**

10. a) Explain look and c-look disk scheduling algorithm.

b) Explain swapping process with neat diagram. **(5+5)**

11. Explain FIFO and OPR (Optimal Page Replacement) algorithms considering the following string.

[7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1]

Frame size → 03. **(5+5)**

12. a) Explain the different file attributes.

b) Explain contiguous file allocation method. **(5+5)**