Question Paper Code: R18A31CS02

R18

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech I Semester Supplementary Examinations, June/July - 2024

OPERATING SYSTEMS

(COMPUTER SCIENCE AND ENGINEERING)

Time: 3 Hours **Max. Marks: 75**

Section – A (Short Answer type questions) (25 Marks)

Answer All Questions		Course Outcome	B.T Level	Marks
1.	Define Operating System	CO1	L1	2M
2.	List out the Services of Operating System	CO1	L1	3M
3.	State the difference between primitive and non-primitive scheduling	CO2	L2	2M
4.	Why do we consider the round-robin algorithm to be superior to the first-come, first-served algorithm?	CO2	L2	3M
5.	Draw the neat diagram of Storage device Hierarchy based on access time.	CO3	L2	2M
6.	Explain four necessary conditions of dead lock	CO3	L2	3M
7.	What is thrashing in OS?	CO4	L1	2M
8.	Draw the basic structure of a page table.	CO4	L2	3M
9.	What are the different Accessing Methods of a File?	CO5	L1	2M
10.	Explain the principles of protection	CO5	L2	3M

Section B (Essay Questions)

Answer all questions, each question carries equal marks. **(5 X 10M = 50M)**

11. A)	Classify and explain different types of System Calls.	CO1	L2	10M
	OR			
B)	Explain Process states and Process control block (PCB) with neat diagrams	CO1	L2	10M
12. A)	Consider the following set of processes with the length of the CPU burst time given in milliseconds	CO2	L3	10M

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
P4	1	4
P5	5	2

The processes are assumed to have arrived in the order p1, p2, p3, p4, p5 all at time 0. Draw Gantt charts illustrating the execution of these processes using FCFS and SJF scheduling and find Average turnaround time and average waiting time.

OR

B)	What is critical section problem and Explain different Classical problems of synchronization	CO2	L2	10M

13. A)	Illustrate banker's algorithm for deadlock avoidance with given example. Considering a system with five processes P0 through P4 and three resources of type A, B, C. Resource type A has 10 instances, B has 5 instances and type C has 7 instances. Suppose at time t0 following snapshot of the system has been taken:	CO3	L3	10M

Process	Allocation	Max	Available
	A B C	A B C	A B C
P_0	0 1 0	7 5 3	3 3 2
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	

OR

B)	Illustrate scheduling algorithms FCFS, SSTF with a request queue (0-199) 98, 183, 37, 122, 14, 124, 65, 67 Head pointer at 53.	CO3	L3	10M
14. A)	Write a short note on following terms in Memory management i) Segmentation ii) Fragmentation	CO4	L3	10M

OR

B)	Define Page Fault and Illustrate different page replacement algorithms with example	CO4	L3	10M
15. A)	Explain different directory and disk structure	CO5	L2	10M

OR

B)	Write a short note on following terms i) Access Matrix ii) Access Control	CO5	L3	10M