23CTU313N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Third Semester)

Branch – **COMPUTER TECHNOLOGY**

OPERATING SYSTEMS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	In a single-threaded process, what does the program counter specify? a) The process priority b) The next instruction to execute c) The memory size of the process d) The number of threads in the process	K1	CO1
	2	Which of the following section is used for global variables in the layout of a process in memory? a) Text Section b) Data Section c) Heap Section d) Stack Section	K2	CO1
2	3	Find out the parallelism which focuses on distributing subsets of the same data across multiple computing cores. a) Task Parallelism b) Data Parallelism c) Pipeline Parallelism d) GPU Parallelism	K1	CO2
	4	Relate the Major problem with priority scheduling algorithm a) Aging b) Starvation c) Deadlock d) Infinite Wait	K2	CO2
3	5	Find out the section in process synchronization, the critical section may be followed by a) Entry Section b) Exit Section c) Remainder Section d) Process Section	K1	CO3
	6	Show the deadlock method in which Bankers Algorithm is used. a) Deadlock Prevention b) Deadlock Avoidance c) Deadlock Detection d) Deadlock Recovery	K2	CO3
4	7	What is the role of the page table in paging? a) To schedule processes for CPU execution b) To map logical addresses to physical addresses c) To allocate I/O devices to processes d) To calculate page size	K1	CO4
	8	What happens when a referenced page is not found in main memory? a) The process is terminated b) A page fault occurs c) The CPU speed decreases permanently d) The page is discarded	K2	CO4
5	9	Which Scheduling algorithm is sometimes called as Elevator algorithm? a) CSCAN b) SCAN c) FCFS d) CLOOK	K1	CO5
	10	What layer in the file system manages metadata information? a) Application Programs b) Logical File Systems c) File Organization Module d) File Control Block	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Outline Virtualization concept in operating system.	K2	CO1
		(OR)		
	11.b.	Explain how System Calls are used in operating system.		
2	12.a.	Identify Multithreading Models between user and kernel threads.	K3	CO2
		(OR)		
	12.b.	Analyze Scheduling Criteria for comparing CPU-scheduling.		
3	13.a.	Organize the Critical-Section Problem and list out some solution to the critical-section problem	K3	CO3
		(OR)		
	13.b.	Apply how deadlock prevention works by breaking at least one necessary condition.		
4	14.a.	Analyze how external fragmentation occurs in continuous allocation	K4	CO4
		(OR)		
	14.b.	Examine the role of page fault in demand paging with an example		
5	15.a.	Compare SCAN and C-SCAN in terms of fairness and performance.	K4	CO5
		(OR)		
	15.b.	Analyze about File System Structure used in operating system.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Analyze how operating system performs Resource Management with example.	K4	CO1
2	17	Classify different types of Scheduling Algorithms in operating system.	K4	CO2
3	18	List out the operations performed by Semaphores with example.	K4	CO3
4	19	Examine about Paging and how Paging avoids external fragmentation?	K4	CO4
5	20	Distinguish Allocation Methods in file systems.	K4	CO5

Z-Z-Z END