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G. VENKATASWAMY NAIDU COLLEGE (AUTONOMOUS), KOVILPATTI – 628 502.**UG DEGREE END SEMESTER EXAMINATIONS - NOVEMBER 2025.**

(For those admitted in June 2023 and later)

PROGRAMME AND BRANCH: B.C.A.

SEM	CATEGORY	COMPONENT	COURSE CODE	COURSE TITLE
V	PART - III	CORE - 9	U23CA505	OPERATING SYSTEM

Date & Session: 04.11.2025/FN**Time : 3 hours****Maximum: 75 Marks**

Course Outcome	Bloom's K-level	Q. No.	SECTION – A (10 X 1 = 10 Marks) Answer <u>ALL</u> Questions.
CO1	K1	1.	Which system runs multiple programs simultaneously? a) Batch b) Parallel c) Serial d) Stack
CO1	K2	2.	What is a program called when it is executing? a) File b) Process c) Compiler d) Job
CO2	K1	3.	Which semaphore uses only 0 or 1 values? a) Counting b) Binary c) Stack d) Monitor
CO2	K2	4.	What condition does a critical section enforce? a) Time slicing b) Single access c) Multitasking d) Process delay
CO3	K1	5.	Which strategy is used for deadlock avoidance? a) Recovery b) Scheduling c) Prevention d) Safe state
CO3	K2	6.	What is the role of Resource Allocation Graph? a) Code logic b) Deadlock detect c) Context switch d) Timer setting
CO4	K1	7.	Which one is a non-pre-emptive scheduling technique? a) RR b) FCFS c) HRN d) MLFQ
CO4	K2	8.	What type of scheduling reduces average waiting time? a) RR b) FIFO c) SJF d) HRN
CO5	K1	9.	Which strategy moves memory contents to disk? a) Caching b) Mapping c) Swapping d) Paging
CO5	K2	10.	What is the role of memory hierarchy? a) Store I/O b) Speed access c) Manage CPU d) Swap files

Course Outcome	Bloom's K-level	Q. No.	SECTION – B (5 X 5 = 25 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b)
CO1	K3	11a.	Illustrate the structure of a Process Control Block (PCB). (OR)
CO1	K3	11b.	Sketch the process states and transitions with a neat diagram.
CO2	K3	12a.	Apply Lamport's Bakery algorithm to achieve thread mutual exclusion. (OR)
CO2	K3	12b.	Illustrate the concept of a Monitor with an example.
CO3	K4	13a.	Analyse the necessary conditions for deadlock to occur and its solutions. (OR)
CO3	K4	13b.	Differentiate between deadlock prevention and deadlock recovery.
CO4	K4	14a.	Compare and contrast Pre-emptive and Non-Pre-emptive CPU scheduling. (OR)
CO4	K4	14b.	Analyse the working of Shortest-Process-First (SPF) scheduling Algorithm.
CO5	K5	15a.	Assess Contiguous Memory Allocation in a single-user system. (OR)
CO5	K5	15b.	Evaluate the working of Demand Paging in virtual memory systems.

Course Outcome	Bloom's K-level	Q. No.	SECTION – C (5 X 8 = 40 Marks) Answer <u>ALL</u> Questions choosing either (a) or (b)
CO1	K3	16a.	Illustrate how interrupts are handled in operating systems. (OR)
CO1	K3	16b.	Illustrate the Inter Process Communication (IPC) mechanism.
CO2	K4	17a.	Analyse various software solutions to the mutual exclusion problem. (OR)
CO2	K4	17b.	Analyse the Semaphore Mechanism used in Process Synchronization.
CO3	K4	18a.	Examine Dijkstra's Banker's algorithm for deadlock avoidance. (OR)
CO3	K4	18b.	Analyse the Deadlock Detection technique using a Resource Allocation Graph.
CO4	K5	19a.	Evaluate Round-Robin CPU scheduling Algorithm. (OR)
CO4	K5	19b.	Assess the functionality of Multilevel Feedback Queue Scheduling Algorithm.
CO5	K5	20a.	Assess the segmentation process. (OR)
CO5	K5	20b.	Assess any three Page-Replacement Strategies.