BACHELOR OF TECHNOLOGY (CBCS - 2023)
B. Tech. Sem-IV Computer Science & Engineering : SUMMER : 2025
SUBJECT: SYSTEM PROGRAMMING & OPERATING SYSTEMS

Day : Tuesday | Time : 10:00 AM-01:00 PM
Date : 27/05/2025 | S-29274-2025 | Max. Marks : 60

NB :
1. Assume suitable data, if necessary.
2. Draw neat labelled diagrams WHEREVER necessary.
3. Figures to the right indicate FULL marks for the question.
4. All questions are COMPULSORY.

Q. 1	Explain in detail assembly language instructions. Consider a suitable assembly language code as an example, perform LC processing and generate symbol table and literal table for the same.	(10)
	OR	
Q. 1	Design the data structures required for a single-pass and two pass assembler. Provide a step-by-step algorithm for the assembly process with suitable example.	(10)
Q. 2	What is an Operating system? List and briefly explain its key functions. Describe the general architecture of an operating system	(10)
	OR	
Q. 2	Illustrate the concept, key characteristics and examples of distributed operating system.	(10)
Q. 3	Illustrate the concept of thread and process. Give types of thread with examples. Differentiate between process and thread.	(10)
	OR	
Q. 3	Illustrate preemptive and non-preemptive scheduling. Explain Round Robin scheduling algorithm with suitable example.	(10)
Q. 4	Explain in detail Dining philosopher classic synchronization problem in operating system.	(10)
	OR	
Q. 4	What is deadlock? Explain Banker's algorithm with suitable example.	(10)
Q. 5	Describe Internal fragmentation, External fragmentation, Compaction with suitable example.	(10)
	OR	
Q. 5	For the reference string given 6, 5, 1, 2, 5, 3, 5, 4, 2, 3, 6, 3, 2, 1, 2 Count the number of page faults that occur with 3 frames using FIFO, Optimal and LRU page replacement methods.	(10)
Q. 6	Explain free space management.	(10)
	OR	
Q. 6	Explain contiguous, linked and indexed allocation methods in detail.	(10)

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