BACHELOR OF TECHNOLOGY (CBCS) (2020 COURSE)
B.Tech.Sem - IV COMPUTER SCIENCE & ENGINEERING : SUMMER : 2024
SUBJECT: SYSTEM PROGRAMMING & OPERATING SYSTEM

Day : Monday
Date : 27/05/2024

S-24304-2024

Time : 10:00 AM-01:00 PM
Max. Marks : 60

N.B.

1) All questions are **COMPULSORY**.
2) Figures to the **RIGHT** indicate **FULL** marks.
3) Assume suitable data **WHEREVER** necessary.
4) Draw neat labeled diagrams **WHEREVER** necessary.

Q.1 How does Pass-I of an assembler operate and elucidate its process with an example? **(10)**

OR

Q.1 Write a note on data structures used in Pass-II assembler. Explain Assembler Directives. Explain ORIGIN, EQU and LTORG with example. **(10)**

Q.2 What is compiler? Explain any two phases of compiler with suitable diagram. Explain concept of LEX with suitable example. **(10)**

OR

Q.2 Explain General loader scheme with advantages and disadvantages. **(10)**

Q.3 What is Operating System? Explain various services offered by OS. Explain different types of OS. **(10)**

OR

Q.3 Draw Gantt chart and calculate Avg. Turnaround Time, Avg. Waiting Time for the following processes using SJF (non-preemptive) scheduling and round robin with quantum 2. **(10)**

Process	Arrival Time	Burst Time
P1	0	6
P2	1	4
P3	4	8
P4	3	3

Q.4 What is critical section? Explain Race condition with example. Explain in detail Readers-Writers problem in operating system. **(10)**

OR

Q.4 Define deadlock. Explain deadlock avoidance algorithm (Banker's Algorithm) with suitable example. **(10)**

Q.5 Consider the page reference string 1, 2, 3, 4, 2, 3, 4, 5, 6, 7, 3, 2, 4. Calculate page fault and page hit for FIFO, LRU and Optimal (frame size = 3) **(10)**

OR

Q.5 Explain following concepts in detail **(10)**

i) Segmentation
ii) Swapping

Q.6 Explain RAID in detail. **(10)**

OR

Q.6 Define the concept of Disk Scheduling and explain the First-Come First-Served (FCFS) algorithm with suitable example. **(10)**

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