R17

Code No: R17A0513

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, January 2024

Operating Systems

(CSE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

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SECTION-I

1	A	Discuss about the evolution of Operating Systems.	**[10M]**
	B	Operating system is resource manager"-Justify this statement with suitable functionality of OS.	**[4M]**
		OR	
2	A	What is a System call? Explain the various types of system calls provided by an operating system.	**[7M]**
	B	Elaborate the functions of Operating Systems.	**[7M]**
		SECTION-II	
3	A	Describe the differences among long-term scheduling. short-term, and medium-term scheduling.	**[7M]**
	B	Explain in detail Readers and Writers Problem of Synchronization.	**[7M]**
		OR	
4	A	Define Process. Explain various steps involved in change of a process state with process state transition diagram.	**[7M]**
	B	Define a semaphore. What is meant by counting semaphore and binary semaphore? Discuss mutual exclusion implementation using semaphore.	**[7M]**
		SECTION-III	
5	A	Compare internal fragmentation and external fragmentation.	**[7M]**
	B	Explain paging technique in detail.	**[7M]**
		OR	
6	A	Illustrate the page-replacement algorithms i) FIFO ii) Optimal Page Replacement use the reference string 7, 0,1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2,1, 2, 0, 1, 7, 0,1 for a memory with three frames.	**[7M]**
	B	What is a Virtual Memory? Discuss the benefits of virtual memory technique.	**[7M]**
		SECTION-IV	
7	A	Discuss free space management of file system.	**[6M]**
	B	A disk drive has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 53. The queue of pending requests, in FIFO order, is 98, 183, 37, 122, 14, 124, 65, 67. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms? i) FCFS ii) SSTF	**[8M]**

OR

8 A Discuss in detail about different file access methods **[9M]**

B How to organize the mass storage? Explain **[5M]**

SECTION-V

9 A Define Deadlock. Discuss the necessary conditions that cause deadlock situation to occur. **[7M]**

B Explain the access matrix model of implementing protection in operating system. **[7M]**

OR

10 A Consider the following snapshot of a system and answer the following questions. **[10M]**

Process	Allocation A B C	Max A B C	Available A B C
P0	1 1 2	4 3 3	2 1 0
P1	2 1 2	3 2 2	
P2	4 0 1	9 0 2	
P3	0 2 0	7 5 3	
P4	1 1 2	1 1 2	

i) Calculate the content of the need matrix.

ii) Is the system in a safe state? If it is, find the safe sequence.

B Write short notes on Language-Based protection. **[4M]**

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