Enroll. No._____

MARWADI UNIVERSITY

Faculty of Technology

Computer Engineering / Information Technology **B.Tech**

SEM: 4 **MU FINAL REMEDIAL** **DECEMBER:2022**

Subject: - (Operating System) (01CE0401) **Date:- 27/12/2022**

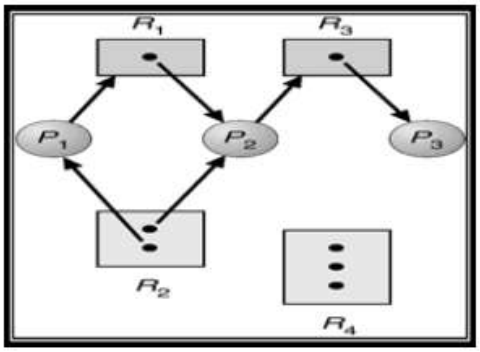
Total Marks:-100 **Time: - 02:00 to 05:00 PM**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1			
(a).	**Answer the Following MCQs. (All Questions are Mandatory)**		**[10]**
1.	What is the disadvantage of the two-level directory structure?		
	i. it does not solve the name collision problem	ii. it solves the name collision problem	
	iii. it does not isolate users from one another	iv. it isolates users from one another	
2.	In a tree structure, when deleting a directory that is not empty?		
	i. The contents of the directory are safe	ii. The contents of the directory are also deleted	
	iii. contents of the directory are not deleted	iv. none of the mentioned	
3.	For effective operating system, when to check for deadlock?		
	i. every time a resource request is made	ii. at fixed time intervals	
	iii. both (A) and (B)	iv. none of the mentioned	
4.	Device drivers are implemented to interface		
	i. character devices	ii. block devices	
	iii. network devices	iv. all of the mentioned	
5.	When hardware is accessed by reading and writing to the specific memory locations, then it is called		
	i. port-mapped I/O	ii. controller-mapped I/O	
	iii. bus-mapped I/O	iv. none of the mentioned	
6.	Which of the following are the types of Path names?		
	i. absolute & relative	ii. local & global	
	iii. global & relative	iv. relative & local	
7.	Which one of the following is the deadlock avoidance algorithm?		
	i. banker's algorithm	ii. round-robin algorithm	
	iii. elevator algorithm	iv. karn's algorithm	
8.	The circular wait condition can be prevented be		
	i. defining a linear ordering of resource types	ii. using thread	
	iii. using pipes	iv. all of the mentioned	
9.	PCB stands for _____		

	i. Peer Control Block	
	ii. Process Control Block	
	iii. Process Control Batch	
	iv. Process Cell Block	
10.	The _____ keeps state information about the use of I/O components.	
	i. CPU ii. OS iii. Kernel iv. Shell	
(b). Answer the Following Questions in One Line. (All Questions are Mandatory)		**[10]**
1.	In UNIX, what is a link?	
2.	Explain Belady's anomaly	
3.	Define Multiprogramming	
4.	What is throughput?	
5.	What is turnaround time?	
6.	List out 5 scheduling criteria	
7.	what is Non-premitive scheduling?	
8.	Define Thread	
9.	Define intruder.	
10.	Define context switching	
Question: 2.		
(a)	Consider the deadlock situation that can occur in the dining philosopher's problem when the philosophers obtain the chopsticks one at a time. Discuss how the four necessary conditions for deadlock hold in this setting. Discuss how deadlocks could be avoided by eliminating any one of the four necessary conditions.	**[8]**
(b)	Explain in detail deadlock prevention	**[8]**
	OR	
(b)	What is deadlock? List and explain the strategies for dealing with deadlocks in detail.	**[8]**
Question: 3.		
(a)	Explain with diagram: i) Man-in-the-middle attack ii) Session hijacking	**[8]**
(b)	What do you mean by authentication? Why Is User Authentication Important?	**[4]**
(c)	Explain access methods in file system interface.	**[4]**
	OR	
(a)	List out software and hardware synchronization solution and explain any 1 software and any1 hardware synchronization problem.	**[8]**
(b)	Explain in detail all the goals of OS	**[4]**

(c)	Consider the following RAG graph and find the safe sequence if there is no deadlock 	**[4]**
Question: 4.		
(a)	Define Security and explain it's goals and threats	**[8]**
(b)	What is System call? Explain types of system calls with 2 examples each	**[8]**
	OR	
(a)	Explain with the help of diagram: Distributed OS with it's features.	**[8]**
(b)	Enlist the services of OS and explain any 4 of them.	**[8]**
Question: 5.		
(a)	Explain working of DMA with suitable diagram.	**[6]**
(b)	Explain kinds of file structure.	**[6]**
(c)	What is a page and what is a frame. How are the two related?	**[4]**
	OR	
(a)	What is Linked allocation? Enlist advantages and disadvantages of it.	**[6]**
(b)	Compute Average Turn Around Time (TAT) and Average Waiting Time (AWT) using Round Robin by taking TQ =3 scheduling method on data given below.	**[6]**

Process ID	Arrival Time	Burst Time
1	5	5
2	4	6
3	3	7
4	1	9
5	2	2
6	6	3

(c)	Explain various Disk-Scheduling Algorithms in detail?	**[4]**
Question: 6.		
(a)	Explain the paging hardware in detail.	**[8]**
(b)	Differentiate User and Kernel mode.	**[4]**
(c)	Given a physical memory with two frames, how many page faults would occur while processing the following reference string of pages using Optimal page replacement algorithms. Also, show which pages would be present in the memory after the completion of reference string. 1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6 Remember all frames are initially empty, so your first unique pages will all cost one	**[4]**

	fault each.	
	OR	
(a)	Explain IPC problem known as Dinning Philosopher Problem with the help of suitable code.	**[8]**
(b)	What is Resource? Explain its type.	**[4]**
(c)	A process references 5 pages A, B , C, D, E in the following order A; B; C; D; A; B; E; A; B; C; D; E. Assuming that the replacement algorithm is FIFO, find out the number of page faults during the sequence of references, starting with an empty main memory with 3 frames.	**[4]**

---Best of Luck---

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– Bloom'S Taxonomy Report –

Sub: Operating System (01CE0401)
Sem.: 4th
Branch: Computer Engineering / Information Technology

Que. Paper weightage as per Bloom's Taxonomy

LEVEL	% of weightage	Question No.	Marks of Que.
Remember/Knowledge	21%	1a(1,4,9,10),1b(1,2,3,6,8,9,10),4b	36
Understand	62%	1a(2,3,5,7,8,)1b(4,5,7),2b,3(a,b,c),4a,5(a,b,c)6(a,b)	106
Apply	17%	2a,3c,5b,6(b,c)	30
Analyze	0%	-------	--
Evaluate	0%	------	--
Higher order Thinking/ Creative	0%	------	---

Chart/Graph of Bloom's Taxonomy