		Reg. No. :											
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Question Paper Code:93305													
B.E./B.Tech. DEGREE EXAMINATION, NOV 2024													
Third Semester													
		Computer Sci	ence	Eng	inee	ring							
		19UCS305-OPE	RAT	ING	SYS	STEN	ЛS						
		(Regul	ation	201	9)								
Dur	ation: Three hours							N	Maxi	mun	n: 10	0 Ma	ırks
		Answer A	LL (	Quest	tions								
		PART A - (5	5 x 1	= 5 ]	Mark	xs)							
1.	For reading input, which	n of the following	syste	m ca	ll is	used	?					CC	D1- U
2.	<ul><li>(a) write</li><li>(b) rd.</li><li>What is interprocess condition</li><li>(a) communication with</li></ul>	nmunication?	(c) r	ead				(	d) cł	nang	e.	CC	D1- U
	(b) communication betw	) communication between two process											
	(c) communication betw	veen two threads of	f san	ne pro	oces	5							
	(d) none of the mention	ed											
3.	Identify either the requested physical address: 1280 is a valid address or not, CO2- App Relocation register:1025 limit register:250.												
	(a) Valid address			(b) Invalid address									
	(c) CPU cannot predict						of th	e ab	ove				
4.	Semaphore is a/an to solve the critical section problem. CO2-							)2- U					
	(a) hardware for a system (b) special program for						•	stem	L				
	(c) integer variable (d) none of the mentioned												
5 is a unique tag, usually a number system.				ntifie	es the	e file	e wit	hin t	he f	ile		CC	D2- U
	(a) File identifier	(	(b) Fi	ile na	ame								
	(c) File type (d)None of the mentioned												

$PARI - B (5 \times 3 = 15 \text{ Marks})$									
6.	Iden	tify the difference between mainframe and desktop operating system	CO1- U						
7.	Diff	CC	D1- U						
8.	Distinguish between internal fragmentation and external fragmentation.								
9.	Define mutual exclusion in critical section problem CO2- U								
10.	Wha	at are the Access methods available in file?.	CO6- U						
	PART – C (5 x 16= 80Marks)								
11.	(a)	Explain in detail about the following types of operating systems.	CO1- U	(16)					
		(i) Mainframe system							
		(ii) Desktop system							
		(iii) Multi processor system							
	Or								
	(b)	Discuss in detail about various operating system components	CO1- U	(16)					
12.	(a)	Explain in detail about inter processor communication	CO2- U	(16)					
		Or							
	(b)	Explain the types of threads	CO2- U	(16)					
13.	(a)	The order of pages needed is given identify the page fault of the following algorithms. (i) <b>FIFO</b> (ii) <b>Optimal</b> (iii) <b>LRU</b>	CO4- App	(16)					
		Pages needed: 7 0 1 2 0 3 0 4 2 3 0							
		Page frame is <b>3</b>							
	Or								
	(b)	The order of pages needed is given identify the page fault of the following algorithms. (i) <b>FIFO</b> (ii) <b>Optimal</b>	CO4- App	(16)					

 $PART - B (5 \times 3 = 15 \text{ Marks})$ 

Pages needed: 1 2 3 2 1 5 2 1 6 2 5 6 3 1 3

6 1 2 4 3

Page frame is **4** 

14. (a) The operating system contains 3 resources, the number of instance CO5- App (16) of each resource type are 7,7,10. The current resource allocation state is as shown below.

Process		Curren llocati		Maximum Need				
	R1	R2	R3	R1	R2	R3		
P1	2	2	3	3	6	8		
P2	2	0	3	4	3	3		
P3	1	2	4	3	4	4		

Is the current allocation in a safe state?

## Or

(b) Consider the following system snapshot using data structures in the CO5- App (16) Banker's algorithm, with resources A,B,C and D and process P0 to P4:

	Max	Allocation	Available
	ABCD	ABCD	ABCD
PO	6012	4001	3211
<b>P</b> 1	1750	1100	
P2	2356	1254	
P3	1653	0633	
P4	1656	0212	
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Using Banker's algorithm, answer the following questions:

- a) How many resources of type A, B, C and D are there?
- b) What are the contents of the need matrix?
- c) Is the system in a safe state? Why?
- d) If a request from process P4 arrives for additional resources of (1,2,0,0), can the Banker's algorithm grant the request immediately? Show the new system state and other criteria.
- 15. (a) Suppose that a disk drive has 5000 cylinders, numbered 0 through CO6- App (16) 4999. The drive is serving a request at cylinder 143. The queue of pending requests, in FIFO order is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. Starting from the 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? FCFS, SSTF, SCAN.

(b) Suppose that a disk drive has 5000 cylinders, numbered 0 through CO6- App (16) 4999. The drive is serving a request at cylinder 143. The queue of pending requests, in FIFO order is 86, 1470, 913, 1774, 948, 1509, 1022, 1750, 130. Starting from the 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? LOOK, C-SCAN,C-LOOK..