Name: Reg No.:_

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY FOURTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018

		Course Code: CS204	
		Course Name: OPERATING SYSTEMS (CS)	
Max	c. Ma	arks: 100	Hours
		Course Name: OPERATING SYSTEMS (CS) Rks: 100 PART A Answer all questions, each carries 3 marks What is the purpose of interrupts? How does an interrupt differ from a trap? Mention the advantages of using loadable kernel modules? (3) Why is context switching considered to be an overhead to the system? (3) How are named pipes different from ordinary pipes? (3) PART B Answer any two questions, each carries 9 marks Describe the differences between symmetric and asymmetric multiprocessing. What are the advantages and disadvantages of multiprocessor systems? What do you mean by peer to peer computing? (3) What is a process? With the help of a diagram, explain the different process (6) states. What is eache coherency problem? (3) Why does an Operating system require dual-mode and multi-mode (6) operations?	
			Marks
1		- ·	(3)
2			(3)
3			(3)
4			(3)
		Answer any two questions, each carries 9 marks	
5	a)	Describe the differences between symmetric and asymmetric	(6)
		multiprocessing. What are the advantages and disadvantages of	
		multiprocessor systems?	
	b)		(3)
6	a)	What is a process? With the help of a diagram, explain the different process	(6)
			(2)
_	b)		
7	a)		(6)
	b)	How is IPC using shared memory done?	(3)
		PART C	
			40
8			` '
9			(3)
10		What are the functions of a dispatcher?	(3)
11			
		Answer any two questions, each carries 9 marks	
12	a	Explain how semaphores can be used to solve Readers-Writers problem.	(6)
	b	Explain why implementing synchronization primitives by disabling	(3)
		interrupts is not appropriate in a single-processor system if the	
		synchronization primitives are to be used in user-level programs.	
13	a)	How can indefinite blocking can be solved in priority scheduling?	(3)
	b)	Assume you have the following jobs shown in the table to execute with one	(6)
		processor. Calculate the average waiting time and average turnaround time if	
		the system uses RR Scheduling and the time slice is 4ms.	

Process	Burst time(ms)	Arrival time			
0	11	0			
1	13	5			
2	6	9			
3	9	13			
4	12	17			

- 14 a) What do you mean by deadlock? What are the four necessary conditions for (3) a deadlock to occur?
 - b) Consider a system with four processes P1, P2, P3, P4, and four types of resources R1, R2, R3, R4. The maximum no: of instances of resources of each type are 5, 7, 7 and 7 respectively. What will be the order of processing of jobs if the allocated matrix and the maximum claim (that each process can claim) matrix are as given below.

Allocated Matrix						Maximum Claim					
 -	R1	R2	R3	R4	RI	R2	R3	R4			
P1	2	1	3	2	3	5	6	4			
P2	0	0	1	2	i	3	4	6			
P3	1	2	1	1	1	4	3	2			
P4	1	1	0	2	2	3	i	2			

			P4	1	1				<i>J</i>	1			
							ART E						
								ach car			5.		
15		With a diagram, explain how paging is done with TLB.								(6)			
	b)	How is protection done in paging systems?									(4)		
16	a)	Differentiate internal fragmentation and external fragmentation.							(4)				
	b)	How is swapping done? Explain with the help of a diagram.								(6)			
17	a)	What do you mean by thrashing? How is it caused?								(4)			
	b)	Consider the following page reference string:								(6)			
		7,2,3,1,2,5,3,4,6,7,7,1,0,5,4,6,2,3,0,1.											
		Assuming demand paging with three frames, how many page faults would								b			
		occur for the following page replacement algorithms.											
		i) LRU replacement ii) FIFO replacement iii) Optimal replacement									nent		
18	a)	The read write head is at 97. The head is moving from 299 to 0. Requests a							uests are	e (6)			
	in the order 94, 82, 101, 110, 198, 75, 87, 124, 136. Hov							6. How	much	i time i	S		
		required by the system if the system is following:											
	i) Shortest seek time first. ii) C-Scan.												
	iii) Elevator algorithm. Assume 1 head movement takes 1 ms.												
	b)	How is	disk fo	ormattii	ng don	e?	•						(4)
19	a)	Explair	ı seque	ntial ac	cess ar	nd direc	ct acce	ss meth	ods				(5)
	b)		•							agram			(5)
20	,	What is							•	_			(6)
_ ~	•	How as					-			-			(4)
	~ /	110 11 WI		,			D						(')
