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		學年度	時間	考試
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考試科目 火 11 . . Operating

System

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given in milliseconds:	2. Consider the following set of processes, with the length of the CPU-burst time	Among the code section, data section, open files, registers, and stacks, which ones are shared across threads in a multithreaded process? (5%)	1. What are the actions taken by a kernel to context-switch between processes? (10%)		

 Process	Burst Time	Priority
P1	10	3
P2	1	1
Р3	2	3
P4	1	4
P5	5	2

time 0. What are the turnaround time and the waiting time of each process for each of the following scheduling algorithms? Explain your answer to receive full The processes are assumed to have arrived in the order P1, P2, P3, P4, P5, all at

credit. (21%)

(a) FCFS

(b) SJF

(c) RR with quantum = 1

 ω Consider the following snapshot of a system with five processes (i.e., P1, P2, P3, p4 and P5) and four resource types (i.e., A, B, C and D):

	(2,2,5,6)	(0,2,5,2)	P5
	100	1	1
	(0,4,4,2)	(0,4,2,2)	P4
	(1,0,1,1)	(1,0,1,1)	Р3
	(3,5,0,1)	(2,2,0,0)	P2
(0,0,1,9)	(4,1,1,2)	(2,1,1,0)	P1
Available (A,B,C,D)	Max (A,B,C,D)	Allocation (A,B,C,D)	

Please answer the following questions based on the snapshot provided above.

- (a) Show the content of matrix Need used in the banker's algorithm. (4%)
- (b) Run the safety algorithm and determine if the system is in a safe state. Explain your answer to receive full credit. (10%)

7. Please explain and compare the following disk-organization techniques: RAID-0, RAID-1, RAID-01 and RAID-10. (8%)	
(c) FIFO	
(b) LRU	
of page references when the following page replacement scheme is used: (15%) (a) Optimal	
down the total number of page faults and the system behavior for the given string	
6. Given a string of page references: A B C D A B D E E A C D A B	
5. Please explain what is RamDisck, and compare RamDisk with SSD and HDD. (6%)	
Please also explain which algorithms may suffer from the starvation problem. (5%)	
(d) LOOK	
the queue of pending requests, in FIFO order, is 1500, 1999, 1800, 100, 800, 300.	
4. For a given disk drive with 2000 cylinders, numbered from 0 to 1999, it is currently serving a request at track 1000 and the previous request was at cylinder 1200. If	
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