

Sardar Patel Institute of Technology Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

May 2019

Max. Marks: 60 Class:FYMCA

Course Code:MCA21

Name of the Course: Operating System

Duration: 3Hr Semester:II Branch:MCA

Instruction:

- (1) All questions are compulsory
- (2) Draw neat diagrams
- (3) Assume suitable data if necessary

Q No.			
		Max.	CO
Q.1	Compare Multitogking Multi-	Marks	
	Compare Multitasking, Multiprogramming and Multiprocessing with suitable example	05	CO1
	with suitable example		
	OR		
	Illustrate various services 1 11 00		
Q.2 (a)	Assume you have the fall in th		CO1
- (-)	Assume you have the following jobs to execute with one processor with the jobs arriving in the	05	CO ₂
	sor, with the jobs arriving in the order listed here:		
	Process Arrival Time Burst Time		
	P0 0 5		
	P1 1 3		
	P2 2 1		
	P3 3 2		
	P4 4 3		
	Use Round Robin CPU Scheduling algorithm with Time Quantum=2 to calculate Assess T		
	Time and Average Turnaround Time and Average Weit		4
	ing Time?		
	OR		
	Oit .		
	Consider the following set of processes. Draw Gantt chart, Find average waiting time average to		
	erage waiting time, average turnaround time for Priority scheduling		CO2
	algorithm algorithm	1- 1	
	Process No Arrival Time Priority Burst Time		
	1 0 4 3		
	2 1 5 5	THE EN	
	3 2 7(H) 2		
	3 2 7(H) 2 4 3 2 5 5 4 1(L)		

Q.3 (a) Consider the system with 3 Task T1, T2, T3. Use Rate Monotonic Scheduling and Earliest Deadline First scheduling algorithm to schedule given set of tasks. Give conclusion. Task No								
to schedule given set of tasks. Give conclusion. Task No Service Time Period/Deadline T1 1 3 T2 2 4 T3 1 6 6	Q.2 (b)	the state of the s					05	COZ
Task No Service Time Period/Deadline T1 1 3 4 1 1 3 1 6 1 1 1 1 1 1 1 1						algorithm		
Q.3(a) Suppose want to synchronize two concurrent processes P and Q using binary semaphores S1 and S2. The code for the processes P and Q is shown below-Process P while(1) {		to schedule	given set	of tasks. Give co	nerusion.			
Q.3(a) Suppose we want to synchronize two concurrent processes P and Q using binary semaphores S1 and S2. The code for the processes P and Q using binary semaphores S1 and S2. The code for the processes P and Q is shown below-Process P while(1) { P(S1); P(S2); Critical Section V(S1); V(S2); } Process Q: while(1) { P(S2);			Task No	Service Time	Period/Deadline			
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to insert data into an empty slot of the buffer. A consumer tries to remove data from a filled slot in the buffer. How does the synchronization can be achieved between these two processes. Justify your Answer. OR Discuss Dining Philosopher problem in detail and find the solution to it using Semaphores.		and consun	ner, which	are operating o	on the buffer. A pro	ducer tries		THE STATE
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to it using Semaphores.				OR			THE	
to it using Semaphores.		Discuss Din	ning Philos	opher problem i	in detail and find th	ne solution		CO2
Q3 (c) Consider the following snapshot of system	0.5 (to it using	Semaphore	S.		- Jordan Til	*	002
	Q3 (c)	Consider th	e following	g snapshot of sy	stem	76.		

	F																
		Max					Allocation					ilable					
	TO.	A	В	C	D	A	В	C	D	A	В	C	D				
	PO	6	0	1	2	4	0	0	1	3	2	1	1				
	P1	1	7	5	0	1	1	0	0								
	P2	2	3	5	6	1	2	5	4								
	P3	1	6	5	3	0	6	3	3								
	P4	1	6	5	6	0	2	1	2								
	Using Banker's algorithm, Answer the following questions.																
Harris .	1. How n	nany	res	sour	ces (of ty	pe.	A. I	3. C.	and	1 D	are	ther	re?			
	2. What 3. Is the	are	the	in a	tent	s of	the	Nee	ed m	atri	x?	_					
	3. Is the system in a safe state? if yes, give safe state sequence.											05	CO2				
Q4 (a)	Given Five memory partitions of 100Kb, 300Kb, 150Kb, 650Kb, 450Kb (in order), There are 4 processes in system with following											L.	00	1002			
	requests	n or 212	aer) Kb.	315	nere Kb	are	4 F	roc	esses	in 70 I	syst	em	with	h followir	ıg		
	Apply Fo	llow	ing	Allo	cati	ion	algo	rith	m F	or F	ixec	in o	raer ze P	'). artitionir	10"		
	scheme														6		
		1. First Fit 2. Best Fit														,	
	3. Worst Fit																
	Calculate total space get wasted due to internal fragmentation and													d (06	CO3	
Q4 (b)	external Fragmentation for all the above three scheme. Compare Paging and Segmentation(based on parameters basic fragmentation and segmentation)													1	0.4		
	sic, fragmentation, address, size, table)											i- (04	CO3			
130																	
							0	R									
	What is I) a ma	For	1491	m		- 11										
	What is I with suita	nie (ulag	ram											t		CO3
Q4 (c)	Consider t	he f	ollo	wing	g pa	ge r	efere	ence	stri	ng 4	1,7,6	,1,7	,6,1.	2.7.2.	+		-
	Apply follows 1. FIFO 2	OWIL	ig p	age	repl	acer	nent	alg	orit	hms							
	How many	pag	ge fa	ults	wor	nai uld (occu	ras	sum	ing	3 fre	moo	.7 T.	~:4:-11- 1			
04 (4)	Trames are	em	pty.													4	CO3
Q4 (d)	Suppose that the disk drive has 200 cylinders, numbered 0-																
	199. The drive is currently servicing the request at cylinder 53. The previous request was at 65. The pending requests are																
	00,01,100,0	12, Le	$\mathbf{v}_{0}, \mathbf{r}_{0}$	0,14	U, U	.00	Cal	cula	te t	he t	otal	hea	ad r	novement			
	50,91,150,92,130,18,140,70,60 Calculate the total head movement for the following disk scheduling algorithms? 1. FCFS 2. SSTF 3. SCAN 4. C-SCAN 5. LOOK 6. C-LOOK																
Q5 (a)	Discuss an	a Co	omp	are	$\operatorname{diff}\epsilon$	eren	t Fil	A	lloce	tion	N/L	6.	C-I	LOOK	00		CO3
O5 (L)	their technique, advantages, and disadvantages)													6	CO4		
Q5 (b)	State the significance of Access metrics in the significance of Access											04	4	CO4			
							OF	t							12		
	Compare d	iffer	ent	type	s of	thr	eate										
				0 10		VALL	5413										CO4