Name:

Enrolment No:



UPES

End Semester Examination, May 2024

Course: Operating System

Program: B. Tech E&CE

Course Code: CSEG 2007

Semester: IV

Time: 03 hrs.

Max. Marks: 100

Instructions:

1. Attempt all the questions wisely.

3. Hov	questions in section A, B and C are compulsory. vever, an internal choice to attempt any one question has given in quest	ion 9 of sect	ion B and
ques	stion 11 of section C. SECTION A (5Qx4M=20Marks)		
S. No.		Marks	СО
Q 1	Define process and explain process control block?	4	CO1
Q 2	Discuss the different types of semaphore and its application.	4	CO2
Q 3	Explain the term deadlock in OS.	4	CO3
Q 4	Discuss what is seek time and transfer time.	4	CO5
Q 5	Explain page fault in OS.	4	CO4
	SECTION B (4Qx10M= 40 Marks)		
Q 6.	Explain resource allocation graph and its usage.	10	CO3
Q 7	Explain following concepts. i) Demand paging. ii) Thrashing iii) Fragmentation	10	CO4
Q 8	Suppose a disk drive has 400 cylinders, numbered 0 to 399. The driver is currently serving a request at cylinder 143 and previous request was at cylinder 125. The queue of pending request in FIFO order is: 86,147,312,91,177,48,309,222,175,130. Starting from the current head position what is the total distance in cylinders that the disk to satisfy all the pending request for each of the following disk scheduling algorithms? i) FCFS ii) LOOK iii) SCAN	10	CO5
Q 9	Explain the following concept. i) Bound Waiting ii) Multiprocessing operating system	10	CO1, CO2

	iii)	OS	funct	ions								
						OR						
										6, 2, 1, 2,		
									d occu	r for the		
				ent algor		, assumi	ng 4 fr	rames.				
	i)		-	olacemei								
	ii)	FII	FO rep	placeme	nt							
					,		CTION					
	T =				`	2Qx20I					T	1
Q 10	Consider a paged memory system with 5 GB logical address space, 64											
		MB physical address space and 4KB size page. Furthermore, each page table entry is of 16 bits. Then calculate the following.										
		•			n calc	ulate the	e follov	ving.				
	i) Bits i											GO 4
		ii) Number of pages in processiii) Bits for page number									20	CO4
					. 1							
				es in phy	sical i	memory						
	v) Bits											
O 11	vi) Pag			.:		:41a		and 1 a		aa A 1aaa		
Q 11	Consider the following system with 5 processes and 4 resources. A has											
	total of 3 instances, B has 14 instances, C has 12 instances and D has 12 instances. In the table given below, column entry from 2 to 5 denotes the											
								£	4. 5 4.			
	instance	es. In th	e tabl	le given	below	, colum	n entry			notes the		
	instance	es. In th resourc	e tabl	le given cation to	below each	, colum process	n entry and las	st four c	olumn	notes the represent		
	instance	es. In th resourc	e tabl	le given	below each	, colum process	n entry and las	st four c	olumn	notes the represent		
	instance	es. In th resourc	e tablee allo	e given cation to	below each ired by	r, colum process y a proc	n entry and las	st four c each typ	olumn: e to co	notes the represent mplete.		
	instance	es. In the resource simum in Currer	e tablee allo resour	e given cation to	below be each ired by Rem	y colum process y a proc	n entry and las ess of e	st four ceach typ Curr	olumn: e to co ent ava	notes the represent mplete.		
	instance current the max	es. In the resource simum of Currer A	ne table e allo resour	e given cation to rce requirection C	below be each ired by Rem A	process y a process naining	n entry and last ess of enteed	st four ceach typ Curr A	olumn : e to co	notes the represent mplete.		
	instance current the max	es. In the resource simum of the Currer A 0	table e allo resour allo B	e given cation to ree require cation C	Rem	y a process a process B 0	n entry and lasess of eneed C 0	st four ceach typ Curr	olumn: e to co ent ava	notes the represent mplete.		
	instance current the max	Currer A 0 2	te table e allo resour ent allo B 1 0	cation to cation C 0 0	Rem A 0 2	y a process a process B 0 0	n entry and lasess of e	st four ceach typ Curr A	olumn : e to co	notes the represent mplete.		CO1.
	rinstance current the max PO P1 P2	Currer A 0 2 3	ne table e allo resour nt allo B 1 0 0	e given cation to ree require cation C	Rem	process y a process y a process a aining to the second sec	n entry and lasess of e	st four ceach typ Curr A	olumn : e to co	notes the represent mplete.		CO1, CO2.
	P0 P1 P2 P3	Currer A 0 2 3 2	ne table e allo resour nt allo B 1 0 0 1	e given cation to ree required to cation C	Rem A 0 2 0 1	r, colum process y a process B O O O O	n entry and lasess of connect C O O O O	st four ceach typ Curr A	olumn : e to co	notes the represent mplete.	20	CO2,
	P0 P1 P2 P3 P4	Currer A 0 2 3 2 0	ne table e allo resour nt allo B 1 0 0 1 0	e given cation to ree require cation C 0 0 3 1 2	Rem A 0 2 0 1 0	r, colum process y a process of	n entry and lasess of conneed C 0 2 0 0 2 2 2 2	Curr A 0	ent ava	notes the represent mplete.	20	CO2, CO3,
	PO P1 P2 P3 P4 Answer	Currer A 0 2 3 2 0 c the following the same of the contract of	ne table e allo resour nt allo B 1 0 1 0 llowin	cation to cation C	Rem A 0 2 0 1 0 ions us	r, colum process y a process y a process of	n entry and lasess of eneed C 0 2 0 2 ker's a	Curr A 0	ent ava	notes the represent mplete.	20	CO2,
	P0 P1 P2 P3 P4 Answer i) What	Currer A 0 2 3 2 0 the following the followi	ne table e allo resour nt allo B 1 0 0 1 0 llowin ntents	cation to rece required to a cation of the c	Rem A 0 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	r, colum process y a process y a process of	n entry and lasess of eneed C 0 2 0 2 ker's a	Curr A 0	ent ava	notes the represent mplete.	20	CO2, CO3,
	PO P1 P2 P3 P4 Answer i) What	Currer A 0 2 3 2 0 the follower system	ne table se allo resour nt allo B 1 0 0 1 0 contents m in sa	cation to rece required to a cation to cation	Rem A 0 2 0 1 0 ions usimum	process y a process y a process of aining to the second of	n entry and lasess of eneed C 0 2 0 2 ker's a atrix?	Curr A 0	ent ava B 0	notes the represent mplete.	20	CO2, CO3,
	PO P1 P2 P3 P4 Answer i) What ii) Is the	Currer A 0 2 3 2 0 the following system quest for	ne table se allo resour nt allo B 1 0 0 1 0 contents m in sa	cation to rece required to a cation to cation	Rem A 0 2 0 1 0 ions usimum	process y a process y a process of aining to the second of	n entry and lasess of eneed C 0 2 0 2 ker's a atrix?	Curr A 0	ent ava B 0	notes the represent mplete.	20	CO2, CO3,
	PO P1 P2 P3 P4 Answer i) What	Currer A 0 2 3 2 0 the following system quest for	ne table se allo resour nt allo B 1 0 0 1 0 contents m in sa	cation to rece required to a cation to cation	Rem A 0 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	process y a process y a process of aining to the second of	n entry and lasess of eneed C 0 2 0 2 ker's a atrix?	Curr A 0	ent ava B 0	notes the represent mplete.	20	CO2, CO3,
	PO P1 P2 P3 P4 Answer i) What ii) Is the iii) If re immedia	Currer A 0 2 3 2 0 the follower system quest for attely?	ne table se allo resour nt allo B 1 0 0 1 0 llowing ntents or products	cation to rece required to a cation to receive to a cation to a ca	Rem A 0 2 0 1 0 ions us imum 2? arrives	r, colum process y a process y a process of	n entry and lasess of eneed C 0 2 0 2 ker's a atrix?	Curr A 0	ent ava B 0	notes the represent mplete.	20	CO2, CO3,
	PO P1 P2 P3 P4 Answer i) What ii) Is th iii) If re immedi Explair	Currer A 0 2 3 2 0 the following system quest for attely?	ne table e allo resour nt allo B 1 0 1 0 1 1 0 1 1 1 1 1 1 1 1 1 1 1 1 1	cation to rece required to a cation to cation	Rem A 0 2 0 1 0 ions us imum c? epts:	r, colum process y a process y a process of	n entry and lasess of eneed C 0 2 0 2 ker's a atrix?	Curr A 0	ent ava B 0	notes the represent mplete.	20	CO2, CO3,
	PO P1 P2 P3 P4 Answer i) What ii) Is the iii) If re immedi Explain i)	Currer A 0 2 3 2 0 the follower system quest for ately?	nt allo nt all	cation to rece required to a cation to receive the cation to recei	Rem A 0 2 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	r, colum process y a process y a process of	n entry and lasess of eneed C 0 2 0 2 ker's a atrix?	Curr A 0	ent ava B 0	notes the represent mplete.	20	CO2, CO3,
	P0 P1 P2 P3 P4 Answer i) What ii) Is th iii) If re immedi Explair i) ii)	Currer A 0 2 3 2 0 the following system quest for lately? a the following system contiguous for lately?	nt allo nt all	cation to rece required to the cation to receive the cation of the catio	Rem A 0 2 0 1 0 0 ions us imum 2? arrives	r, colum process y a process y a process of	n entry and lasess of conneed C 0 2 0 0 2 ker's a atrix?	Curr A 0	ent ava B 0	notes the represent mplete.	20	CO2, CO3,