U.S.N					



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belgaum)

Fourth Semester, B.E. - Information Science and Engineering Semester End Examination; June - 2016 Operating System

	•	Juct anng S	ystem						
ne: 3 hrs				Max. Ma	arks: 100	_			
: Answer FIVE full ques	tions, selec	ting ONE full d	question from eac	ch unit.					
		UNIT -	- I						
What are the activities f	or which th	e OS is respon	sible for in conne	ection with,		1			
i) Process management ii) File management									
b. Explain any two types of system calls.									
What are VM? Explain	the benefit	of creating virt	tual machine (VM	1).		:			
Differentiate between:						(
i) User level thread and Kernel level thread ii) Process and Thread									
b. Explain different types of scheduler.									
What is IPC? Explain m	essage pass	sing system in	detail.			;			
		UNIT -	II						
The following processe	es arrive fo	r execution at	times indicated.	Draw the Ga	ıntt chart a	.nd			
Calculate Average waiti	ng time for	:							
i) FCFS scheduling ii) SJF scheduling iii) Round Robin scheduling									
· ·	Process	Arrival time	Burst time in m	s					
	-					1			
Explain multiple proces	sor schedul	ing.							
Explain the scheduling	criteria cons	sidered for pro	cess management	t.					
What do you mean	by binar	y semaphore	and counting	semaphore?	Explain t	the			
implementation of wait	and signal	operation.				J			
Explain any one synchro	onisation pr	oblem for testi	ing newly propose	ed synchroniza	ation schem	ne.			
What is race condition?	List the rec	quirements that	a solution to crit	ical section m	ust satisfy.				
		UNIT -	Ш						
	What are the activities of i) Process management Explain any two types of What are VM? Explain Differentiate between: i) User level thread and Explain different types of What is IPC? Explain multiple processes Calculate Average waitinity i) FCFS scheduling Explain multiple process Explain the scheduling of What do you mean implementation of wait Explain any one synchrology.	what are the activities for which the i) Process management ii) F Explain any two types of system can what are VM? Explain the benefit Differentiate between: i) User level thread and Kernel level Explain different types of schedule. What is IPC? Explain message pass. The following processes arrive for Calculate Average waiting time for i) FCFS scheduling ii) SJF scheduling. Process P1 P2 P3 P4 Explain multiple processor schedule. Explain the scheduling criteria consumption of wait and signal of Explain any one synchronisation processes.	What are the activities for which the OS is responsi) Process management ii) File manageme Explain any two types of system calls. What are VM? Explain the benefit of creating virth Differentiate between: i) User level thread and Kernel level thread Explain different types of scheduler. What is IPC? Explain message passing system in UNIT— The following processes arrive for execution at Calculate Average waiting time for: i) FCFS scheduling ii) SJF scheduling Process Arrival time P1 0 P2 1 P3 2 P4 3 Explain multiple processor scheduling. Explain the scheduling criteria considered for prowhat do you mean by binary semaphore implementation of wait and signal operation. Explain any one synchronisation problem for testical what is race condition? List the requirements that	What are the activities for which the OS is responsible for in connection i) Process management ii) File management Explain any two types of system calls. What are VM? Explain the benefit of creating virtual machine (VMD) Differentiate between: i) User level thread and Kernel level thread ii) Process and Explain different types of scheduler. What is IPC? Explain message passing system in detail. UNIT - II The following processes arrive for execution at times indicated. Calculate Average waiting time for: i) FCFS scheduling ii) SJF scheduling iii) Round Ro Process Arrival time Burst time in machine P1 0 5 P2 1 3 P3 2 8 P4 3 6 Explain multiple processor scheduling. Explain the scheduling criteria considered for process management What do you mean by binary semaphore and counting implementation of wait and signal operation. Explain any one synchronisation problem for testing newly propose	the: 3 hrs	me: 3 hrs Max. Marks: 100 Answer FIVE full questions, selecting ONE full question from each unit. UNIT - I What are the activities for which the OS is responsible for in connection with, i) Process management Explain any two types of system calls. What are VM? Explain the benefit of creating virtual machine (VM). Differentiate between: i) User level thread and Kernel level thread Explain different types of scheduler. What is IPC? Explain message passing system in detail. UNIT - II The following processes arrive for execution at times indicated. Draw the Gantt chart at Calculate Average waiting time for: i) FCFS scheduling ii) SJF scheduling iii) Round Robin scheduling Process Arrival time Burst time in ms P1 0 5 P2 1 3 P3 2 8 P4 3 6 Explain multiple processor scheduling. Explain the scheduling criteria considered for process management. What do you mean by binary semaphore and counting semaphore? Explain to implementation of wait and signal operation. Explain any one synchronisation problem for testing newly proposed synchronization schem. What is race condition? List the requirements that a solution to critical section must satisfy.			

5 a. What is dead lock? Explain the four necessary conditions for a dead lock.

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b. Consider the following snapshot.

Allocation				-	Max		Available			
Process	A	В	C	A	В	C	A	В	C	
P0	0	0	2	0	0	4	1	0	2	
P1	1	0	0	2	0	1				
P2	1	3	5	1	3	7				
P3	0	3	2	8	4	2				
P4	1	4	3	1	5	7				

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Is the system in a safe state? If a request from process P2 arrives (0, 0, 2). Can this request be granted immediately?

- c. Explain how circular wait condition can be prevented from occurring.
- 6. a. What are the drawbacks of contiguous memory allocation? Given fixed memory partition of 100 kb, 500 kb, 200 kb, 300 kb, 600 kb. How would each of the first fit, best fit, and worst fit algorithm places:

- 212 kb, 417 kb, 112 kb and 426 kb inorder which algorithm makes efficient use.
- b. Explain internal fragmentation. Can we completely remove internal fragmentation using segmentation?

8

c. Explain how page table can be improved for paging.

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UNIT - IV

7 a. Consider the following page reference string,

R = 7, 0, 1, 2, 0, 3, 0, 4, 2, 3, 0, 3, 2, 1, 2, 0, 1, 7, 0, 1

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Compute the page faults for:

- i) FIFO
- ii) LRU
- iii) Optimal.
- b. Explain demand paging.

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8 a. Explain different file allocation methods.

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b. Explain different types of directory structures with example. Mention its advantages and disadvantages.

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UNIT - V

9 a. With an example distinguish between SSTF, FCFS, SCAN and look disk scheduling.

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b. Differentiate between boot block and bad blocks.

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c. Explain in brief selection of disk scheduling algorithm.

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10 a. What is protection? Distinguish between mechanism and policies. Explain briefly access matrix with domains as objects.

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b. When do we need to revoke the access right? Explain the revocation of capabilities.

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c. Explain lock-key mechanism to compromise between access list and capability list.