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5E3255

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B.Tech.V Sem.(Main/Back) Exam Dec. 2012
Computer Science
5CS5 Operating System
Common for CS & IT

Time : 3 Hours   Maximum Marks : 80
                                        Min. Passing Marks : 24

Instructions to Candidates:

Attempt any **five question** *selecting* **one question** *from* **each unit** *. All Questions carry equal marks. Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used / calculated must be stated clearly.*

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. _____Nil_____   2. _____Nil_____

UNIT-I

Q.1 (a) What are the main functions of an operating system? Explain the types of an operating system in brief?   (8)

(b) How an operating system works as a resource manager and virtual machine?   (8)

OR

Q.1 (a) What are threads? What are the difference between user level threads and kernal level threads?   (8)

(b) What is PCB ? Explain each process state of process model in brief.   (8)

Q.2 (a) What is critical section problem? Explain the role of Lock variable and TSL Instruction in busy waitry. (8)

(b) What is dining philosophers problem? Explain the solution of this problem by a suitable algorithms. (8)

OR

Q.2 (a) What are the differences between preemptive and non preemptive scheduling? (4)

(b) Explain Turnaround time & Response time. (4)

(c) Consider the following set of process with the arrival time and CPU burst time given in millisecond.

Process	AT	Bursttime
P_1	0	8
P_2	1	4
P_3	2	9
P_4	3	5

What is an avg. W.T for these process with preemptive SJF scheduling. (8)

UNIT - 3

Q.3 (a) What are safe and unsafe states? (4)

(b) Consider the following snapshot of system. (12)

	Allocation			Max			Available		
	A	B	C	A	B	C	A	B	C
P_0	0	1	0	7	5	3	3	3	2
P_1	2	0	0	3	2	2			
P_2	3	0	2	9	0	2			
P_3	2	1	1	2	2	2			
P_4	0	0	2	4	3	3			

If request from process P$_1$ arrives for (0, 1, 2) can the request be granted immediately.

What is a content of matrix need?

OR

Q.3 (a) Explain free space management using bitmap, link list /free list.   (8)

(b) Explain the difference between logical and physical address space. What is Swapping? Explain Swap in and Swap out operation.   (8)

UNIT - IV

Q.4 (a) What is a difference between Pager and Swapper?   (4)

(b) What is Demand Paging?   (4)

(c) What is Thrashing?   (8)

OR

Q.4 Consider 3 page frames and the following reference string use F1F0 Page replacement algorithm to calcutate the number of page faults in each reference string is :

7 0 1 2 0 3 0 4 2 3 0 3 2 1 2 0 1 7 0 1

(16)

UNIT - V

Q.5 Suppose that a disk drive has 200 cylinders, numbered 0 to 199. The drive is initially at cylinder 53. The queue with request for 1/0 to blocks in cylinders:

98, 183, 37, 122, 14, 124, 65, 67

Count the total head movement of cylinders in SCAN and C SCAN scheduling.

(16)

OR

Q.5 Write short notes on: (16)

(i) Attributes of Files.

(ii) Naming of file.

(iii) Directory structure.