

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)

UNIT - II

- 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 calculate 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.

5E3255

3

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