



Printed Pages : 4

TCS - 601

(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 1077

Roll No.

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## B. Tech.

(SEM. VI) EXAMINATION, 2008-09

### OPERATING SYSTEMS

Time : 3 Hours]

[Total Marks : 100

1 Attempt any **four** :

- Compare multitasking and multiuser operating system.
- What are the desirable and essential characteristics of an operating system ?
- Explain in brief real time operating systems. Illustrate some areas where they are used.
- What are the different services provided by an operating system?
- Draw the layered structure of an operating system
- What do you mean by system Protection? How it is achieved?

2 Attempt any **four** :

- What is PCB (Process Control Block) ?
- Explain principle of concurrency.



- (c) Demonstrate process synchronization using procedure-consumer problem.
- (d) What is critical section ? Design algorithm to solve this problem.
- (e) How can the interprocess communication be achieved?
- (f) Define following:
  - (i) Dispatch.
  - (ii) Context switching.

3 Attempt any **four** :

**5×4=20**

- (a) Define following terms:
  - (i) Average waiting time.
  - (ii) Time Slice or quantum.
  - (iii) Resposne time.
  - (iv) Turn Around Time.
  - (v) CPU Utilization.
- (b) What should be the selection criteria for scheduling algorithm ?
- (c) Calculate turn around time and average waiting time for following set of processes, if these processes are scheduled using :
  - (i) SJF



(ii) Priority (both preemptive)

<i>Process</i>	<i>Burst Time</i>	<i>Priority</i>	<i>Arrival Time</i>
P1	7	1	0
P2	3	2	4
P3	9	3	7

- (d) What is dead lock and its conditions ?
- (e) How dead lock can be avoided ?
- (f) Explain the difference between busy waiting and blocking.

4. Attempt any two :

10×2=20

- (a) Explain the difference between internal fragmentation and external fragmentation? Which one occurs in paging system? Which one occurs in systems using pure segmentation ? Discuss various ways of removing fragmentation.
- (b) Explain the concept of virtual memory and how it is obtained by Demand Paging and segmentation ?
- (c) Write short notes on the following:
- Thrashing.
  - Cache memory.
  - Allocation of frame.
  - Dining-Philosopher-Problem.



**5** Attempt any **four** :

- (a) Define following terms.
    - (i) Seek time
    - (ii) Rotational latency
    - (iii) File Sharing.
  - (b) Explain Indexed allocation method of disk allocation.
  - (c) What is DMA ?
  - (d) What are the functions of a file system ?
  - (e) Draw the file structure for UNIX operating system or Disk operating system (DOS).
  - (f) List five system calls related to file system.
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