

[This question paper contains 3 printed pages.]

Your Roll No. ....

6156

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PGDCA/II Sem.

Paper—CS-2.1

OPERATING SYSTEM

(Admission of 1998 and onwards)

Time : 3 Hours

Maximum Marks : 100

*(Write your Roll No. on the top immediately  
on receipt of this question paper.)*

*Attempt All questions. Parts of a  
question should be answered together.*

1. (a) What is the purpose of command interpreter ? Why is it usually separate from the kernel ? 4
- (b) Differentiate between :  $4 \times 3 = 12$ 
  - (i) Synchronous I/O and Asynchronous I/O
  - (ii) Hard real time system and Soft real time system
  - (iii) Trap and Interrupt
  - (iv) Acyclic and General graph directory structures
2. (a) What is the cause of thrashing ? Explain any two methods to overcome the problem. 6
- (b) Explain Convoy effect in FCFS method of process scheduling ? Suggest a method to recover from this problem. 6

[P. T. O.]

3. (a) Write short notes on : 4 × 4 = 16
- (i) Overlay technique
  - (ii) Copy on write
  - (iii) Virtual machines
  - (iv) Cooperating processes
- (b) Give the steps required to perform read operation during I/O with polling. 3
4. (a) Discuss the role of dispatcher and medium term scheduler ? 5
- (b) Which of the following instructions should be privileged ? 3
- (i) Read the clock
  - (ii) Switch from the user mode to monitor mode
  - (iii) Clear memory
5. (a) Consider the following set of processes, with the length of the CPU burst time given in ms :

Processes	Burst Time	Arrival Time
P1	8	0.0
P2	4	0.4
P3	1	1

What are the average turnaround time and waiting time for these processes with FCFS, RR (Time quantum = 2), after drawing the Gantt chart. 8

- (b) What is thread ? What resources are used when a thread is created ? How do they differ from those used when a process is created ? 4
6. (a) Why the page size is always the power of 2? 2
- (b) Consider a logical address space of eight pages of 1024 words each, mapped onto a physical memory of 32 frames :
- (i) How many bits are in the logical address ? Explain. 6
- (ii) How many bits are in the physical address ? Explain. 6
7. What are the spinlock semaphores ? What are the advantages and disadvantages associated with them ? Discuss the ways to overcome the drawbacks associated with them. 6
8. (a) Consider a file system that supports the strategies of contiguous, linked and indexed allocation. What criteria should be used in deciding which strategy is best utilized for a particular file ? 6
- (b) Distinguish between the file implementations of DOS and UNIX file systems. 4
9. (a) What is the client server architecture of Windows NT ? Discuss with diagram. 5
- (b) Define consistency semantics. Give the consistency semantics used by UNIX file system. 4