Your Roll No. ....

6156 J

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 × 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

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.

(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

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