

DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VI [INFORMATION TECHNOLOGY]
SUBJECT: (IT 607) APPLIED OPERATING SYSTEM

Examination : Block
Date : 30/03/2012
Time : 11:30 to 12:30

Seat No. : _____
Day : **Friday**
Max. Marks : **36**

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed.

- (a) Give difference between hard real time and soft real time operating system. [2]
- (b) What are five major activities of an operating system in regards to process management? [2]
- (c) Consider the following segment table: [2]
- | Segment | Base | Length |
|---------|------|--------|
| 0 | 219 | 400 |
| 2 | 90 | 100 |
- What are the physical addresses for the following logical addresses?
- | Segment No | Offset |
|------------|--------|
| 0 | 430 |
| 2 | 10 |
- (d) A computer system has 6 tape drives, with n processes competing for them. Each process may need 3 tape drives. Find the maximum value of n for which the system is guaranteed to be deadlock free. [2]
- (e) Give difference between global Page replacement and Local page replacement. [2]
- (f) Discuss concept of pure demand paging. [2]

Q.2 Attempt *Any Two* from the following questions. **[12]**

- (a) Consider the following set of processes, with the length of the CPU-burst time given in milliseconds:

Process	Burst Time	Priority
P1	10	3
P2	1	1
P3	2	3
p4	1	4
P5	5	2

The processes are assumed to have arrived in the order P1, P2, P3, P4, P5
All at time 0.

- a. Draw Gantt charts illustrating the execution of these processes using FCFS, SJF, a nonpreemptive priority (a smaller priority number implies a higher priority).
- (b) Discuss Semaphore. Also discuss how deadlock and starvation can occur if we use semaphore for mutual exclusion.
- (c) Discuss Microkernel operating system structure. Also discuss its advantages and disadvantages.

- Q.3** (a) Consider the following page-reference string: [6]
1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6.
How many page fault would occur assume we have four frames available.
1. LRU replacement.
2. FIFO replacement.
- (b) Draw and discuss User Level Threads and Kernel Level threads. Also list out their major advantages and disadvantages. [6]

OR

- Q.3** (a) Suppose that a disk drive has 5,000 cylinders, numbered 0 to 4999. The drive is currently serving a request at cylinder 143, and the previous Request was at cylinder 125. The queue of pending requests, in FIFO order, is 86,1470,913,1774,948,1509,1022,1750,130 [6]
Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests
For each of the following disk-scheduling algorithms?
a. FCFS
b. SSTF
- (b) Discuss various methods of Free space management of File system. [6]