Nirma University of Science and Technology

Institute of Diploma Studies

Semester End Examination (IR/RPR), November - 2008

Diploma in Information Technology, Semester- V

1CEB03 MODERN OPERATING SYSTEM SOFTWARE

Roll / Exam No. | Supervisor's initial with date

Time: 3 Hours | Max. Marks: 100

Instructions:
1. Attempt all questions.
2. Figures to right indicate full marks.
3. Section wise separate answer book to be used
4. Draw neat sketches wherever necessary.

SECTION-I

Q-1 A. Answer the following. (Any Five) **(10)**

1. Define: (a) Loosely Coupled System
   (b) Tightly Coupled System
2. List benefits of microkernel system approach.
3. What is process? If process is into running state then write down possible states of process in which process may enter.
4. Define: (a) Zero Capacity buffer
   (b) Degree of Multiprogramming
5. Explain dispatcher in brief.
6. What is an operating system & its main purpose?

B. Explain PCB in detail with diagram. **(04)**

Q-2 A. Answer the following. (Any Two) **(06)**

1. Explain different file types.
2. What is co-operating processes? Discuss advantages of co-operating processes.
3. Explain Layered approach system structure.
4. List multithreading models & explain any one.

B. Answer the following. **(08)**

1. Explain operating system services.
2. List file allocation methods & explain indexed allocation method.

C. Answer the following.

1. Discuss Naming in IPC. **(04)**
2. Justify "context switching is pure overhead to CPU". **(02)**

Q-3 A. Consider the following set of process with a length of the CPU burst time given in milliseconds. **(06)**

process	Arrival time	Burst time
P1	1	8
P2	0	3
P3	2	4

(a) Draw Gantt charts illustrating the execution of these processes using Preemptive SJF and round robin. (Time slice=1ms)

(b) Compute the waiting times in each of the two schedules in (a) and find which of them provides results in the minimal average waiting time and turnaround time.

B. Answer the following.(Any Two) **(06)**

1. Discuss job scheduler.
2. Explain various file operations.
3. Discuss two-level directory structure.
4. Explain ISAM.

C. Discuss scheduling criteria. **(04)**

SECTION-II

Q-4 A. Fill in the blanks.(Any Four) **(04)**

1. If the physical address 14345 & logical address is 345 then relocation register value is _____.
2. In paging physical memory is divided into fixed size of blocks called _____ .
3. SCSI stands for _____.
4. Segmentation will remove _____ fragmentation.
5. HAL stands for _____.

B. Answer the following. **(10)**

1. Explain Virtual memory.
2. Give difference between swapper & lazy swapper.
3. Justify "page size is always in power of 2".
4. Define: (a) bus
   [b]controller
5. Explain cycle stealing.

C. What is TLB? Explain working of TLB with the help of diagram. **(04)**

Q-5 A. Answer the following. (Any Two) **(06)**

1. Explain concept of swapping.
2. Discuss Demand Paging.
3. Explain Inverted page table.
4. Discuss Interrupt handling mechanism.

B. Answer the following.(Any one) **(06)**

1. What is page fault? Write down steps to handle page fault with diagram.
2. Explain I/O request life cycle.

C. Consider the following page reference string **(06)**
1, 7, 6, 3, 2, 2, 1, 0, 1, 2, 3, 7, 0, 1
How many page faults would occur for the following page replacement algorithm assuming three frames which are initially empty.
(a) LRU
(b) Optimal
(c) FIFO

Q-6 A. Answer the following. **(08)**

1. Explain segmentation with diagram.
2. Explain DMA with diagram.

B. Answer the following. **(06)**

1. Give difference between FAT & NTFS.
2. Explain (a) spooling
(b) buffering