

2006 VISVESVARAYA TECHNOLOGICAL UNIVERSITY

FIFTH SEMESTER B.E DEGREE EXAMINATIONS

OPERATING SYSTEM

(COMPUTER SCIENCE & ENGINEERING, INFORMATION TECHNOLOGY)

JANU/FEBRU 2006

TIME: 3 HOUR
MAXIMUM MARK :100

Note: 1. Answer any Five full questions.

1. (a) What is an operating system (OS)? Differentiate between the two views of OS.
(b) List the essential properties of the following types of operating systems:
 - i) Batch
 - ii) Time sharing
 - iii) Distributed.(c) Mention the activities connected with process management, memory management of and filemanagement,
2. (a) Compare virtual machine and no virtual machine.
(b) Write the structure of PCB and the state transition diagram. Mention the function of each state.
(c) Describe the function of long term, medium term and short term schedulers with a block diagram.
(d) Write a program in C language to create a child process and synchronize with the main program.
3. (a) Differentiate between onetooone and manytomany model used for multithreading implementation.
(b) Define throughput and response time in a multiprogramming system. (2marks)
(c) Explain round robin scheduling policy.
(d) Consider the following set of processes. The processes have arrived in the order P1, P2, P3, P4, P5 all at time Q.
 - i) Draw four Gantt charts illustrating ;the execution of these processes using FCFS, SJF, a no preemptive priority (a smaller priority number implies a higher priority), and RR (quantum=1) scheduling
 - ii) What is the turnaround time of each process for each process for each of the scheduling algorithms in part (I)?
2. (a) Explain critical section problem. Discuss on efficient algorithm which can meet all the requirements to solve this problem.
(b) Write a monitor solution to the dining philosopher's problem.
(c) What a is deadlock? What are the necessary conditions for a deadlock situation?
(d) Describe banker's algorithm for deadlock avoidance.
5. (a) Determine the total swap time for a user process oof size 4 MB with a disk transfer rate of 10 MB per second and latency time is 12 msec.

(b) Describe both internal and external fragmentation problems encountered in contiguous memory allocation scheme.

(c) Explain paged memory allocation scheme.

(d) What is virtual memory concept? Explain the address translation mechanism.

6. (a) Define:

i) Thrashing

ii) Belady's anomaly and

iii) Effective access time in demand paging.

(b) consider the following page reference

1,2,3,4,2,1,5,6,2,1,2,2,3,7,6

How many page faults would occur for the following replacement algorithms

Assuming three page frames in the main memory? All page frames are initially empty so that first unique pages will all cost one fault each

1)FIFO

2)LRU

3)Optimal.

(d)Differentiate between two level directory structured and tree structured directory.

(d)Explain the structure of disk.

7. (a)Explain the structure of disk.

(b)Explain the 6 file operations.

(c)Discuss on SCAN disk scheduling method. Also compare with CSCAN scheduling.

8. (a) Describe areas matrix model of protection.

(b)Explain the different program threats.

(c)Discuss on the process management function in Unix OS.