A 227

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2005.

Fifth Semester

Computer Science and Engineering

CS 333 — OPERATING SYSTEMS

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the difference between Networked OS and distributed OS?

2. Name the dynamic memory allocation techniques based on size.

3. Give any two examples of control structures for indicating parallelism.

4. What is the hardware feature provided in order to perform mutual exclusion operation indivisibly?

5. List out the criteria for comparing CPU scheduling algorithms.

6. Define the terms Demand Paging and Prepaging.

7. What are the differences between physical address, logical address and virtual address in a virtual memory system?

8. What is virtual memory?

9. List out any two disk scheduling techniques.

10. Define seek-time and latency time for a Hard-Disk (HDD) mechanism.

PART B — (5 × 16 = 80 marks)

11. (i) Explain Dekker's Algorithm for single process mutual exclusion. (8)

(ii) What are the differences between "signals", "messages" and "monitors"? Give an example for each of them along with its application. (8)

12. (a) (i) Write a brief note on application of JAVA language for virtual machine environment. (8)

(ii) Write a short note on implementation and benefit of virtual machines. (8)

Or

(b) (i) What are the problems involved in the system design and implementation of an O.S. (8)

(ii) Distinguish between multiprogramming (multi-tasking) and multi processing. (8)

13. (a) Explain the various CPU scheduling techniques with Gantt charts clearly as indicated by (process name, arrival time, process time) for the following (A, 0, 4), (B, 2, 7), (C, 3, 2) and (D, 3, 2) for FCFS, SJF, SRT, RR with quantum 1 and 2. (8+8)

Or

(b) (i) What is the advantage of having different time-quantum sizes at different levels in Multi-level Feedback Queue (MFQ) based scheduling. (8)

(ii) A system uses the following preemptive priority scheduling algorithm (processes with larger priority numbers have higher priority). Processes enter the system with a priority of 0. While waiting on the ready queue, a process priority changes at rate α. While running, a process priority changes at rate β. (8)

(1) What is the algorithm that results from $\beta > \alpha > 0$?

(2) What is the algorithm that results from $\alpha < \beta < 0$?

Justify your statement.

14. (a) (i) Why paging and segmentation combined in one scheme for virtual memory. (8)

(ii) What are the aspects for comparison of different MMV strategies? (8)

Or

(b) (i) Explain the concept of inverted page-tables. (8)

(ii) Write short notes on "working set" and "Degree of multiprogramming". (8)

15. (a) Explain the process management under LINUX 0.S. (16)

Or

(b) (i) Compare and contrast "free-space management" and "swap-space management". (8)

(ii) What is meant by "symmetric multiprocessing" and "asymmetric multiprocessing" in LINUX O.S.? (8)
