Reg. No. :

Question Paper Code: 12042

M.E. DEGREE EXAMINATION, DECEMBER 2013.

First Semester

Computer Science and Engineering (with Specialization in Networks)

01PNE101- OPERATING SYSTEM DESIGN

(Regulation 2013)

Duration: Three hours   Maximum: 100 Marks

Answer ALL Questions.

PART A -   (10 x 2 = 20 Marks)

1. Differentiate trap and interrupt.

2. State why a swapping scheme is implemented in a medium term scheduler.

3. Define the use of monitor.

4. List the four conditions for deadlock.

5. Why are page sizes always powers of 2?

6. Define thrashing.

7. What are the structures used in file-system implementation?

8. What is sector sparing?

9. What are the advantages of dynamic linking of libraries compared to static linking?

10. List the four versions of windows 2000.

PART - B (5 x 14 = 70 Marks)

11. (a) (i) What are the main advantages of multiprocessor systems?   (4)

     (ii) What is the need for system calls? How system calls are used? Explain with
          an example.   (10)

Or

(b) Explain the message passing is interprocess communication and the various methods for logically implementing them. (14)

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

(ii) Define the critical section problem and discuss the three requirements that a solution to the critical section problem must satisfy. (6)

Or

(b) Explain banker's algorithm for deadlock avoidance. (14)

13. (a) (i) Given memory partitions of 100 K, 500 K, 200 K, 300 K, and 600 K (in order), how would each of the first-fit, best-fit, and worst-fit algorithms place processes of 212 K, 417 K, 112 K, and 426 K (in order)? Which algorithm makes the most efficient use of memory? (8)

(ii) Why are segmentation and paging sometimes combined into one scheme? (6)

Or

(b) Consider the following page reference string:
1,2,3,4,2, 1,5,6,2, 1,2,3, 7, 6, 3, 2, 1,2,3,6.
How many page faults would occur for the following replacement algorithms, assuming one, two, three and four frames?
    (i) LRU replacement
    (ii) FIFO replacement
    (iii) Optimal replacement
Remember that all frames are initially empty, so your first unique pages will all cost one fault each. (14)

14. (a) (i) List and discuss the most common schemes for defining the logical structure of a directory. (7)

(ii) Compare and contrast "free-space management" and "swap space management". (7)

Or

(b) Explain the various disk scheduling algorithms with suitable example. (14)

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15. (a) (i) Write short notes on Linux memory management system. (7)

　　　 (ii) Describe the salient features of Linux I/O. (7)

Or

　(b) Explain in detail about the networking in windows 2000. (14)

PART - C (1 x 10 = 10 Marks)

16. (a) Write a multithreaded Pthread or Java program that generates the Fibonacci series. (10)

Or

　(b) Compare any concept of different operating systems. (10)

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