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Question Paper Code : 81312

M.E. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Elective

Computer and Communication

CP 9260/CP 964/10244 CCE 13 — OPERATING SYSTEM DESIGN

(Regulation 2009/2010)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. List the advantages of multiprocessor systems.
2. Difference between long term and short term scheduler.
3. Define semaphore.
4. Define Turnaround time and response time.
5. Differentiate paging from segmentation.
6. Define Virtual memory.
7. What are the informations associated with an open file?
8. What are the different types of file access methods?
9. List out the design goals of windows 2000.
10. Write the components of Linux system.

PART B — (5 × 16 = 80 marks)

11. (a) Assume that as a developer you are to design a multitasking operating system. Identify the key components elements required for the design and justify the role of the components of an operating system.

Or

(b) (i) Discuss about the issues of Thread. (8)

(ii) Explain the need and working concept of "co-operating Processes".(8)

12. (a) Write down the solution to synchronize the access to the critical section by two processes and check that the solution meets all the requirements. (16)

Or

(b) Consider the following set of processes that arrive at time 0, with the length of the CPU burst time given in ms.

Process	Burst Time in ms
P1	15
P2	5
P3	7
P4	4
P5	10

Give Gantt charts illustrating the execution of these jobs using SJF, FCFS, and round robin scheduling (quantum of 2 and 3 ms) algorithms. Compute the average turnaround time and average waiting time of each job. (16)

13. (a) (i) Explain the concept of contiguous memory allocation with neat diagram. (12)

(ii) What is the need for segmentation with paging? (4)

Or

(b) Consider the following page reference string 0, 3, 0, 2, 0, 4, 1, 2, 0, 3, 1, 4, 2. Calculate the number of page faults using FIFO, and LRU replacements for the frame size of 3 and 4. Find if the algorithms suffer from Belady's anomaly. (16)

14. (a) Illustrate the working principles of allocation methods for allocating space for files on disk with their merits and demerits. (16)

Or

(b) Suppose that the head of a moving head disk with 100 tracks, 0 to 99, is currently serving a request at 32 and has just finished a request at track 45. The queue of request is kept in FIFO order 77, 57, 97, 25, 15, 85, 75, 38, 45. What is the total number of head movement needed to specify these requests for the following disk scheduling algorithms?

(i) SSTF

(ii) SCAN

(iii) C-SCAN. (16)

15. (a) (i) Describe the Linux kernel modules. (8)

(ii) Discuss process management of Linux OS. (8)

Or

(b) (i) Discuss about any five system components of Windows 2000. (8)

(ii) Give a note on environmental subsystem of Windows 2000. (8)
