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## Question Paper Code : 31304

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2013.

Fourth Semester

Computer Science and Engineering

CS 2254/CS 45/CS 1253/10144 CS 405/080250012— OPERATING SYSTEMS

(Common to Information Technology)

(Regulation 2008/2010)

(Also Common to PTCS 2254 – Operating Systems for B.E. (Part-Time) Fourth semester Computer Science and Engineering – Regulation 2009)

Time : Three hours                                             Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Operating Systems. List out the functions of Operating Systems.

2. Describe the actions taken by a kernel to context-switch between processes.

3. What is turnaround time?

4. State the four necessary condition for a deadlock situation to arise.

5. Compare swapping and overlays.

6. Differentiate external fragmentation with internal fragmentation.

7. Define FAT.

8. What is Relative Block Number?

9. What is double buffering?

10. Draw the diagram for interrupt driven I/O cycle.

PART B — (5 × 16 = 80 marks)

11. (a) (i) List out the various process states and briefly explain with a state diagram. (8)

(ii) Define thread, its benefits and the models of multithreading. (8)

Or

(b) (i) What is a virtual machine? List out the advantages of virtualization. Explain the creation of a Virtual machine with architecture diagram. (8)

(ii) Explain the operating systems structures. (8)

12. (a) (i) How does a deadlock can be avoided using Banker's algorithm? (8)

(ii) Discuss in detail the critical section problem and also write the algorithm for Readers-Writers problem with semaphores. (8)

Or

(b) Explain the difference in the degree to which FCFS, RR and Non-preemptive SJF scheduling algorithms, discriminate in favour of short process. (16)

13. (a) (i) Explain any two, page replacement algorithms. (8)

(ii) Explain the concept of demand paging and the performance issue of demand paging. (8)

Or

(b) Explain the principles of segmented and paged implementation of memory with a diagram. (16)

14. (a) (i) Explain why logging metadata updates ensures recovery of a file system after a file-system crash. (8)

(ii) Describe the different mechanisms used to protect a file. (8)

Or

(b) (i) Write short note on Linux file system. (8)

(ii) Explain different directory implementation methods. (8)

15. (a) Why disk scheduling is necessary? Explain the different seek optimization techniques. (16)

Or

(b) Explain briefly about the levels of RAID. (16)

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