21-6 AN

Reg. No. | | | | | | | | | | | | |

**Question Paper Code : 51400**

**B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016**

**Seventh Semester**

**Electrical and Electronics Engineering**

**CS 2411 / CS 609 / 10144 CS 405 – OPERATING SYSTEMS**

**(Common to Electronics and Instrumentation Engineering and Instrumentation and Control Engineering)**

**(Regulations 2008/2010)**

**Time : Three Hours** **Maximum : 100 Marks**

**Answer ALL questions.**

**PART – A (10 × 2 = 20 Marks)**

1. What are the three main purposes of an operating system ?
2. What are the situations in which change of state of one process may cause a change in the state of another process ?
3. Differentiate preemptive from non-preemptive scheduling.
4. Is it possible to have a deadlock involving only one process ? State your answer.
5. Mention the use of Translation Look Aside buffer (TLB).
6. Brief the procedure for handling page fault.
7. What is a file management system ?
8. What are the disadvantages of log-structured file systems ?
9. What is spooling ?
10. Distinguish bit-level striping and block-level striping.

## PART – B (5 × 16 = 80 Marks)

11. (a) Define the essential properties of the following types of operating systems :

(i) Batch

(ii) Time sharing

(iii) Real time

(iv) Distributed

**OR**

(b) A Scalable application server is to be implemented to handle a web-based application. The server handles request received in the form of messages. It starts a new thread if the request queue exceeds a certain number of entries and shuts down some threads if the message load decreases. Explain how the server can be implemented using threads. Can signals be used to advantage ?

12. (a) Explain the differences in the degree to which the following scheduling algorithms discriminate in favour of short processes :

(i) FCFS **(5)**

(ii) RR **(6)**

(iii) Multilevel feedback queues **(5)**

**OR**

(b) Write about deadlock conditions and banker's algorithm in detail. **(16)**

13. (a) (i) Consider the page reference string: 1, 2, 3, 4, 2, 5, 3, 4, 2, 6, 7, 8. 7, 9, 7, 8, 2, 5, 4 and 9. How many page faults would occur for LRU, FIFO and Optimal page replacement algorithms when the number of frames is three ? **(12)**

(ii) What are the advantages and disadvantages of contiguous and non-contiguous memory allocation ? **(4)**

**OR**

(b) (i) Describe the Linux memory management components in detail. (6)

(ii) Explain how logical memory addresses are translated into physical memory address in segmented memory management system. (10)

14. (a) Explain the use of Directory in organization of files. Discuss the implementation of techniques below in detail : (16)

(i) Tree structured directory

(ii) Acyclic graph directory.

**OR**

(b) (i) Enumerate the methods used to allocate disk space for file systems. Discuss their working, advantages and disadvantages. (10)

(ii) Write short notes of Backup and Recovery mechanisms in File systems. (6)

15. (a) (i) What is Direct memory access ? Explain the working of DMA in detail. (12)

(ii) Differentiate blocking and non-blocking I/O. (4)

**OR**

(b) (i) Discuss in detail about the different levels of RAID. (8)

(ii) Explain in detail about stable storage and tertiary storage implementation. (8)

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