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**Question Paper Code : 57247**

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

**Fifth Semester**

**Electronics and Instrumentation Engineering**

**CS 6401 – OPERATING SYSTEMS**

**(Common to Fourth Semester Computer Science Engineering and Information Technology, Instrumentation and Control Engineering and Sixth Semester Electronics and Communication Engineering and Medical Electronics)**

**(Regulations 2013)**

**Time : Three Hours**

**Maximum : 100 Marks**

**Answer ALL questions.**

**PART – A (10 × 2 = 20 Marks)**

1. What are the advantages of peer-to-peer systems over client-server systems ?
2. What is the purpose of system programs ?
3. Under what circumstances is user level threads is better than the kernel level threads ?
4. What is the meaning of the term busy waiting ?
5. Name two differences between logical and physical addresses.
6. How does the system detect thrashing ?
7. Why is rotational latency usually not considered in disk scheduling ?
8. How does DMA increase system concurrency ?
9. State the components of the Linux system.
10. Define the function of Caching-only serves.

**PART - B (5 × 16 = 80 Marks)**

11. (a) (i) Distinguish between the client-server and peer-to-peer models of distributed systems. (8)
- (ii) Describe three general methods for passing parameters to the operating system with example. (8)

**OR**

- (b) (i) How could a system be designed to allow a choice of operating systems from which to boot? What would the bootstrap program need to do? (8)
- (ii) Describe the differences between symmetric and asymmetric multiprocessing. What are three advantages and one disadvantage of multiprocessor systems? (8)

12. (a) (i) It is possible to have concurrency but not parallelism? Explain. (8)
- (ii) Consider a system consisting of four resources of the same type that are shared by three processes, each of which needs at most two resources. Show that the system is deadlock free. <https://www.onlineanna.com> (8)

**OR**

- (b) (i) Describe the actions taken by a kernel to context-switch between processes. (8)
- (ii) Provide two programming examples in which multithreading does not provide better performance than a single-threaded solution. (8)

13. (a) (i) Describe a mechanism by which one segment could belong to the address space of two different processes. (8)
- (ii) Why are segmentation and paging sometimes combined into one scheme? Explain them in detail with example. (8)

**OR**

- (b) (i) Under what circumstances do page faults occur? Describe the actions taken by the operating system when a page fault occurs. (8)
- (ii) Discuss situations in which the least frequently used (LFU) page replacement algorithm generates fewer page faults than the least recently used (LRU) page-replacement algorithm. Also discuss under what circumstances the opposite holds good. (8)

14. (a) (i) Why is it important to balance file-system I/O among the disks and controllers on a system in a multitasking environment ? (8)
- (ii) Discuss the advantages and disadvantages of supporting links to files that cross mount points. (8)

OR

- (b) (i) Explain why logging metadata updates ensures recovery of a file system after a file-system crash. (8)
- (ii) Could a RAID level 1 organization achieve better performance for read requests than a RAID level 0 organization ? If so, how ? (8)
15. (a) (i) Why is live migration possible in virtual environments but much less possible for a native operating system ? (8)
- (ii) What are the primary goals of the conflict-resolution mechanism used by the Linux kernel for loading kernel modules ? (8)

OR

- (b) Explain the step-by-step procedure for setting up a Linux multifunction server. (16)
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