

Reg. No. :

Question Paper Code : 10505

M.E./M.Tech. DEGREE EXAMINATIONS, APRIL/MAY 2019.

First Semester

Computer Science and Engineering

CP 5153 — OPERATING SYSTEM INTERNALS

(Regulation 2017)

(Common to: M.E. Computer Science and Engineering (With Specialization in Networks)/ M.E. Multimedia Technology/ M.Tech. Information Technology)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is the purpose of system call?
2. List the features of Re-entrant kernels.
3. Differentiate User level threads and Kernel threads.
4. What is the characteristics of TASK_INTERRUPTIBLE process state.
5. What is the superblock object?
6. What are the main parameters affected by the service routine sys_mount()?
7. What is the function of zone allocator?
8. What are reserved page frames?
9. What is the purpose excve()?
10. How is the main() be declared to use the environment variables?

PART B — (5 × 13 = 65 marks)

11. (a) Explain the concept of memory barrier and spinlocks available in Linux.

Or

- (b) Describe the two techniques available to monitor the end of an I/O operation.

12. (a) Discuss the system calls that can terminate a User Mode application.

Or

- (b) With simple examples illustrate the organization of resources by the processes and threads.

13. (a) Write short notes on :

- (i) Namespaces
- (ii) Dentry objects.

Or

- (b) Interpret the usage of inode object and file objects.

14. (a) Describe the process of page frame management used by Linux.

Or

- (b) Illustrate the buddy system algorithm and the significance of page frame cache.

15. (a) Write a shell script to add two very large integers A and B stored in two files a.txt and b.txt respectively. These numbers are big enough that they are beyond the capacity of any data-type. You can assume that these numbers are containing 30 or more digits. Inputs should be taken from files and the result should be stored in another file.

Or

- (b) Describe the process of creating and destroying pipes with suitable examples.

PART C — (1 × 15 = 15 marks)

16. (a) Interpret the sequence of kernel routines to be invoked if there is a hypothetical system which doesn't do any other operation other than reading a set of values and do a basic arithmetic operation and display the result.

Or

- (b) Evaluate the need for device driver programs on a huge supercomputer. How do you optimize the usage of I/O device in such a setup?