

M.E. / M.TECH. DEGREE EXAMINATIONS, DEC 2020 (Held during April, 2021)

First Semester

CP18103- OPERATING SYSTEM INTERNALS

(Computer Science and Engineering)

(Regulation 2018)

Time: Three hours

Maximum : 80 Marks

Answer ALL questions

PART A - (8 X 2 = 16 marks)

1. The following part of the UNIX operating system interacts with its hardware is _____
A. VI editor
B. shell
C. kernel
D. none of these
2. Each entry in the inode table is the size of _____.
A. 32kb
B. 64 Gb
C. 64kb
D. 64 bytes
3. In UNIX which of the following information is not the part of the user?
A. kernel task
B. task scheduling
C. scheduling parameters
D. system call states
4. In which the access takes place when different processes try to access the same data concurrently and the outcome of the execution depends on the specific order, is called _____.
A. critical condition
B. race condition
C. both a and b
D. None of these
5. Discuss the need for execution tracing
6. Discuss the four states of dentry objects
7. Compare and contrast half-duplex pipes and full-duplex pipes
8. Give reasons why are credentials important on multiuser systems? List few traditional process credentials.

PART B - (4 X16 = 64 marks)

09. (a) (i) Analyze the system calls involved in file-handling mechanism in Unix with appropriate arguments. (8)
- (ii) Investigate how transition takes place between user mode and kernel mode in Unix. (8)

(OR)

- (b) (i) Illustrate with examples, the characteristics of Unix file system (8)
- (ii) Investigate how can a parent process inquire about termination of its children? (8)
10. (a) Compare FCFS, RR, SJF and Priority Scheduling algorithms for the given mix of Process, Arrival time, burst time and priority, assume a **time slice of 10** milliseconds and compute the completion for each job and average response time. Also represent the flow of execution using Gantt chart. (16)

Process	Arrival Time	Burst Time	Priority
P_1	0	28	3
P_2	1	14	1
P_3	2	9	2
P_4	3	5	4

(OR)

- (b) Differentiate the system calls involved in process creation and termination. (16)
11. (a) (i) Assess the mode of interaction taking place between processes and VFS objects (8)
- (ii) Examine the need for various files systems in Unix (8)
- (OR)**
- (b) (i) Examine the most suited data structure for implementing Virtual File System in Unix (8)
- (ii) Interpret the steps involved in mounting a file system in Unix (8)
12. (a) (i) Consider a system having buddy system with physical address space 128 KB. Calculate the size of partition for 18 KB process. Discuss the steps involved in this algorithm along with its advantages and disadvantages. (8)
- (ii) Examine the importance of slab management structure for managing slab pages. (8)

(OR)

- (b) Analyze the data structures for the basic mechanisms that Unix systems offer to allow interprocess communication. (16)