Reg No.:_____ Name:_____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY

M.Tech Degree S2 (R,S) (FT/WP) Examination May 2025 (2022 scheme)

Course Code & Name:

222TCS001 ADVANCED OPERATING SYSTEMS

Max. Marks: 60 Duration: 2.5 Hours

PART A

Answer all questions. Each question carries 5 marks Marks

1 How does the vfork() differ from the fork() system call and list out different steps involved in vfork(). (5)

2 What is the effect of setting the following Interrupt Handler flags? (5)

a) IRQF_DISABLED

b) IRQF_SHARED

3 Compare Big Kernel Lock with Sequential lock in Linux. (5)

4 Explain different types of high memory mapping supported by Linux. (5)

5 Write notes on opaque and explicitly sized data types supported in Linux. (5)

PART B

Answer any 5 questions. Each question carries 7 marks

6 Explain the concept of process termination and its related system calls. (7)

7 a) CFS is called a fair scheduler in Linux. Justify the statement. (4)

b) Write about the different types of Multitasking operating systems. (3)

8 Describe how work queues differ from the other bottom half mechanisms. (7)

9 a) How is a semaphore different from a spin lock? When are spin locks preferred over semaphores? (3)

b) A shared variable in the kernel is simultaneously accessed by several reader and writer threads. Which are the different synchronization mechanisms supported by the Linux kernel for such scenarios? (4)

10 Explain the four primary object types of the Virtual File System. (7)

11 Compare the memory allocation mechanisms kmalloc() and vmalloc() in Linux. (7)
Which one provides better performance and why?

12 Summarize the concept of the following I/O schedulers: (7)

a) The Deadline I/O Scheduler.

b) The Anticipatory I/O Scheduler.

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