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MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

I SEMESTER M.TECH. MID SEMESTER EXAMINATION

SUBJECT: CSE - 5114 ADVANCED SYSTEM SOFTWARE

Time: 10:30 AM – 12:30 PM Date: 11/10/2023 MAX.MARKS: 30

Note:

- Answer all the questions
- Missing data may be assumed suitably

1A. With a neat diagram, Illustrate the Kernel architecture. Also, discuss the advantages of using modules in Kernel architecture. 5M

1B. A) In Linux, we write functions to modify only local variables, and do not alter global data structures. Illustrate, what type of function it is? 3M
B) The CPU executes a kernel control path sequentially from the first instruction to the last. Discuss the different event that occurs, when the CPU interleaves the kernel control path.

1C. In the kernel data segment, which fields will be assigned the values of the segment descriptor in the global descriptor table. 2M

2A. Briefly describe regular paging. Support your answer with diagram and valid flags. 4M

2B. Illustrate the different parameters used in __clone() system call. 3M

2C. How will the atomic operations and distributed interrupt handling issues be resolved in a true SMP kernel architecture. Illustrate with an example. 3M

3A. Illustrate the several fields related to scheduling for each process descriptor. 5M

3B. Classify three classes of processes based on I/O and CPU bound. 3M

3C. Discuss the analysis of a quantam duration of a process with respect to system performance. Support your answer with valid notation and goodness value. 2M