U.S.N

# P.E.S. College of Engineering, Mandya - 571 401
*(An Autonomous Institution affiliated to VTU, Belgaum)*
### First Semester, M.Tech. - Computer Science and Engineering (MCSE)
### Semester End Examination; Jan - 2017
### Advances in Operating Systems

*Time: 3 hrs* *Max. Marks: 100*

*Note: Answer **FIVE** full questions, Selecting **ONE** full question from each **unit**.*

## UNIT - I

| | | |
|---|---|---|
| 1 a. | Explain the Linux Implementation of Threads. | 10 |
| b. | Discuss Linux versus classic Unix Kernels. | 10 |
| 2 a. | Write a note on; | 10 |
| | i) Linux Kernel Versions  ii) Kernel Source Tree | |
| b. | Explain the process creation and Termination. | 10 |

## UNIT - II

| | | |
|---|---|---|
| 3 a. | Explain the different real time scheduling policies. | 10 |
| b. | Explain the working of a load balancer in Linux. | 10 |
| 4 a. | Explain the different system calls related to Linux scheduler. | 10 |
| b. | Discuss preemption and context switching in Linux. | 10 |

## UNIT - III

| | | |
|---|---|---|
| 5 a. | Explain the implementation of system calls in Linux. | 10 |
| b. | Distinguish between Top halves and Bottom halves Interrupt Handler. | 10 |
| 6 a. | Explain the implementation of Interrupt handler in Linux. | 10 |
| b. | Discuss system call context. | 10 |

## UNIT - IV

| | | |
|---|---|---|
| 7. | Write a note on the following : | |
| | i) Semaphores  ii) Mutexes | 20 |
| | iii) Timer  Interrupt Handler  iv) Race condition | |
| 8 a. | Explain the concepts of contention and scalability | 10 |
| b. | Explain the Kernel action of time. | 10 |

## UNIT - V

| | | |
|---|---|---|
| 9 a. | Explain the reasons for using Per-CPU data. | 10 |
| b. | Explain the following functions : | 10 |
| | (i) Kmalloc( )  (ii) Xmalloc | |
| 10 a. | Discuss the concept of Zones in Linux Memory management. | 10 |
| b. | With a neat diagram explain the relationship between Caches, scales and objects. | 10 |

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