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**P.E.S. College of Engineering, Mandya - 571 401**  
 (An Autonomous Institution affiliated to VTU, Belgaum)  
**Sixth Semester, B.E. - Computer Science and Engineering**  
**Semester End Examination; June/July - 2015**  
**UNIX System Programming**

Time: 3 hrs

Max. Marks: 100

**Note:** Answer any **FIVE** full questions, selecting at least **TWO** full questions from **each part**.

**PART - A**

- 1 a. What is POSIX Standard? Explain the different subset of POSIX standard. Write the structure of the program to filter-out –non-POSIX Complaint codes from a user program. 6
- b. Write a C/C ++ POSIX complaint program to check the following limits
  - i) Number of clock ticks      ii) Maximum number of child processes 8
  - iii) Maximum path length      iv) Maximum number of characters in file name.
  - v) Maximum number of open files per process.
- c. Explain the common characteristics of API and describe the Error status code. 6
- 2 a. What are inodes in UNIX systems? Differentiate between Hard link and symbolic link. 6
- b. Distinguish between C stream pointers and file descriptor. 6
- c. List and Explain the different file types available in UNIX. 8
- 3 a. Explain the following API's along with their prototype definitions : 8
  - i) open      ii) write      iii) fcntl      iv) fstat.
- b. What is the importance of locking files? What are mandatory and advisory locks? Why is advisory lock considered safe? What are the drawbacks of advisory locks? Explain. 8
- c. Write a C/C++ program to emulate the UNIX *ln* command. 4
- 4 a. With a neat diagram, Explain the memory layout of 'C' Program. 5
- b. What do you mean by Command line argument? Explain with an example. 5
- c. Explain the following with an example: 10
  - i) setjmp and longjmp      ii) setrlimit and getrlimit

**PART - B**

- 5 a. What is fork and V fork? Explain with a program for each. 10
- b. What is controlling terminal? Explain its characteristics and relation to session and process groups. 10
- 6 a. What is a signal? Explain how UNIX Kernel Support for Signals. 10
- b. What is a daemon Process? Explain daemon characteristics and basic coding rules. 10
- 7 a. What is FIFO? Explain how it is used in IPC. Discuss with an Example, the client server communications using FIFO's. 10
- b. What are the different system calls available to create and manipulate semaphore? 10
- 8 a. What do you mean by Shared memory? Explain its significance in inter process communication. 10
- b. List and Explain the Client server properties. 10