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P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Computer Science and Engineering

Semester End Examination; May/June - 2019

UNIX System Programming

Time: 3 hrs

Max. Marks: 100

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

UNIT - I

- 1 a. With example, explain Absolute path name and Relative path name. 6
- b. Define File. List and explain the categories of files with example. 8
- c. Explain the following commands with example : 6
 - i) *cp* ii) *mkdir* iii) *wc*
- 2 a. List and explain the features of UNIX. 7
- b. Distinguish between internal and external commands in UNIX. Explain two of them each with example. 8
- c. Describe the contents of directory. Explain the mechanism by which its entries are updated. 5

UNIT - II

- 3 a. Interpret the significance of seven fields of the *ls-l* output. 10
- b. Differentiate between hard link and symbolic link in UNIX. 4
- c. Write a UNIX command line to count the number of regular files that exist under the current directory. 6
- 4 a. Define process status. Explain *ps* command with its options. 6
- b. Write *find* command to locate the following group of files from current directory tree : 8
 - i) Files with the extension .html or .sh
 - ii) Files having the inode number 9076
 - iii) Directories having the permission 666
 - iv) Files modify yesterday
- c. Explain the different options available in *sort* command with example. 6

UNIT - III

- 5 a. Describe the three standard files. 10
- b. Define Shell. List and explain the common environment variables. 10
- 6 a. Explain *test* command with its operators. 7
- b. Describe the significance of the following shell parameters : 7

$\$#$, $\$0$, $\$*$, $\$?$ and $\$!$
- c. Write a shell script to find the largest of three numbers. 6

UNIT - IV

- 7 a. Explain the common characteristics of API. Describe error status code. 6
- b. Explain *lseek* API with syntax. 6
- c. List and explain the major differences between ANSI C and K&R C. 8
- 8 a. With syntax, explain the following API's : 12
- i) *read* ii) *open* iii) *access*
- iv) *write* v) *umask*
- b. Explain how *fcntl* API is used for file and record locking? 8

UNIT - V

- 9 a. Explain *fork()* and *vfork()* with examples. 6
- b. With a neat sketch, explain the memory layout of C program. 6
- c. With syntax, explain different versions of *exec* functions. 8
- 10 a. With neat block diagram, explain the kernel support for process. 8
- b. Define Zombie process. Write a program to avoid the creation of Zombie process by calling *fork()* twice. 6
- c. Define Race Condition. Explain how do you avoid Race Condition? 6

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