USN ☐☐☐☐☐☐☐☐☐☐ **10CS62**

Sixth Semester B.E. Degree Examination, Dec.2014/Jan. 2015
UNIX System Programming

Time: 3 hrs.

Max. Marks:100

Note: *Answer FIVE full questions, selecting*
atleast TWO questions from each part.

PART – A

1 a. What are POSIX standards? Explain different subsets of POSIX standards. Write a C or C++ program to check and display _POSIX _VERSION. **(06 Marks)**

 b. Write a C OR C++ program to check the following compile time limits, along with its minimum value. i) supplemental groups, ii) maximum number of links of a file, iii) number of simultaneous asynchronous I/O, iv) real time signals, v) maximum number of child processes. **(08 Marks)**

 c. List common set of APIs in UNIX system. Discuss the common characteristics of APIs along with their error status codes. **(06 Marks)**

2 a. Mention the different file types available in UNIX/ POSIX systems. **(08 Marks)**

 b. List out the common files of UNIX systems with their usage and general file attributes. **(08 Marks)**

 c. Differentiate between file stream pointer and file descriptor. **(04 Marks)**

3 a. Write the prototype and structure of APIs mentioned. Write a simple program for using these APIs. i) utime ii) link. **(12 Marks)**

 b. Describe the device file APIs along with a sample program. **(08 Marks)**

4 a. Outline the environment structure of a process and mention any FOUR environment variables. **(06 Marks)**

 b. Give reasons as to why shared libraries are better, with an example. **(06 Marks)**

 c. Mention at least SIX resource limits and briefly explain the limits that they put on a process. **(08 Marks)**

PART – B

5 a. Explain various exec functions along with its prototypes and diagram that shows the relationship among them. **(10 Marks)**

 b. Explain the "system" function with its prototype. **(04 Marks)**

 c. Explain network login, with suitable diagram. **(06 Marks)**

6 a. Explain error handling for a Daemon process with a neat block diagram. Write the system library functions associated with error logging. **(08 Marks)**

 b. Write the timeline or program sequence of execution for sigsetjmp and siglongjmp handling. **(08 Marks)**

 c. Write the prototype of ALARM and PAUSE function and explain how they operate. **(04 Marks)**

7 a. Write the neat diagrammatic representation of a message queue with proper labeling. Write the data structure associated with message queue along with its elements detail. **(08 Marks)**

 b. Write the prototypes of system library calls available to manipulate shared memory and semaphores. **(07 Marks)**

 c. Write a simple C program to illustrate the concept of a co-process. **(05 Marks)**

8 a. Explain with a neat diagram, how STREAM PIPES can be used to implement client server model. **(10 Marks)**

 b. Explain POPEN and PCLOSE functions with prototypes and demonstrate its usage with a simple C program. **(10 Marks)**

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