B.M.S. College of Engineering, Bengaluru-560019

Autonomous Institute Affiliated to VTU
July / August 2019 Supplementary Examinations

Programme: B.E.
Branch : Information Science and Engineering
Course Code: 15IS4DCUSP
Course: UNIX System Programming

Semester : IV
Duration: 3 hrs.
Max Marks: 100
Date: **27.07.2019**

Instructions: 1. Answer any FIVE full questions, choosing one full question from each unit.
2. Missing data, if any, may suitably assumed.

UNIT - I

1 a) Develop a C/C++ program to print the runtime limits for
   i. Maximum number of child process owned by a process
   ii. Maximum number of opened files per process
   iii. Maximum path length **06**

b) With the help of a neat diagram explain the sequence of events carried out when a process calls a close function to close an already opened file. **06**

c) List all the file attributes along with their meaning. Which of these attributes can't be changed and why? List the commands needed to change the following attributes
1) File size ii) User ID iii) Last access and modification time iv) Hard link count **08**

UNIT - II

2 a) With the help of neat diagram explain UNIX kernel support for processes. **06**

b) Write a C/C++ program to echo all command line arguments and also display the list of environment variables. **06**

c) Discuss in detail the file locking mechanism in UNIX. Write a program to demonstrate advisory file locking of a file. **08**

UNIT - III

3 a) Differentiate a Zombie process and an orphan process. Write a program to demonstrate creation of a zombie and an orphan process. **08**

b) Differentiate fork() and vfork() APIs used to create child process. **04**

c) With the help of a neat diagram briefly explain steps BSD Terminal login. **08**

OR

4 a) Explain the alarm API and write a program to implement sleep API using alarm API **06**

b) Differentiate wait() and waitpid() system calls. Develop a program to print the description of termination status of a child by the parent using the wait() API. **08**

	c)	Discuss Job Control with a neat diagram.	06

UNIT - IV

5	a)	What are signals? Mention the different source of signals. Write a program to setup a signal handler for SIGINT and SIGALRM signals	08
	b)	Write a program to report to the console whether the SIGTERM signal is pending for a process or not.	04
	c)	What is a daemon process? Give example and explain error logging facility for a daemon process.	08

UNIT - V

6	a)	Write a C/C++ program for establishing two-way communication between parent and child using pipes. Differentiate between pipes and named pipes.	10
	b)	Classify the various ways to establish inter process communication using their APIs.	10

OR

7	a)	For the following API call, draw per process file descriptor table socket (AF-INET, SOCK-STREAM,0)	04
	b)	Mention the types in socket API for the following descriptions - **create a stream socket (TCP)** **- create a datagram socket (UDP)** **- create a sequenced packet socket (TCP)**	06
	c)	Discuss message queues as form of IPC. Write a C/C++ program for client-server communication using message queues.	10

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