U.S.N.

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

Autonomous Institute Affiliated to VTU

May / June 2019 Semester End Main Examinations

Programme: B.E.	**Semester : IV**
Branch : Information Science and Engineering	**Duration: 3 hrs.**
Course Code: 15IS4DCUSP	**Max Marks: 100**
Course: UNIX System Programming	**Date: 28.05.2019**

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

Important Note: Completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages. Revealing of identification, appeal to evaluator will be treated as malpractice.

UNIT - I

1 a) The locale.h header defines the location specific settings, such as date formats and currency symbols. **Define any six category values which is the first parameter in the setlocale function.** 06

b) Write a C program to list the actual values of the following system configurations limits on a given UNIX operating systems 06

- **Maximum number of child processes that can be created**
- **Maximum number of files that can be opened simultaneously**
- **Maximum number of message queues that can be accessed**

c) Depict the role of kernel to **support file operations**. 08

UNIT - II

2 a) Develop a program to print the values of **all environment strings**. 06

b) Analyse the following statement 06
if(!(symlink("/home/usr1/raj.txt", "/home/usr2/ram.txt")) to identify error if any. Justify. How is **symlink different from hardlink.**

c) Write a C program to copy contents of a file in **reverse order using lseek().** 08
Assume the file contents with the string **"Step on no pets"**

UNIT - III

3 a) Differentiate between **fork() and vfork()** 06

b) 06

```
int main()
{
  if (fork()== 0)
     printf("HC: hello from child\n");
  else
  {
     printf("HP: hello from parent\n");
     wait(NULL);
```

```
        printf("CT: child has terminated\n");
    }
    printf("Bye\n");
    return 0;
}
```

Predict the output for the code snippet.

c) 08

```
int i, stat;
  pid_t pid[5];
  for (i=0; i<5; i++)   { //five children are created
     if ((pid[i] = fork()) == 0) {
        sleep(1);
        exit(1);
     } }
  // Using waitpid() and printing exit status of children.
  ┌──────────────────────────────┐
  │ for (i=0; i<5; i++)          │
  │    {   }                     │
  └──────────────────────────────┘
```

Complete the above code inside the for block.

OR

4 a) Predict the output for the following : 06

system("pause");
system(NULL);
system(“ls -l”);

b) Explain the concepts of the **interpreter** files. 06

c) Design a C program to show the **execvp** function. 08

UNIT - IV

5 a) Use appropriate signal APIs to write a C program to block user interrupts like **SIGINT, SIGSTOP using process masks.** After a while, check to see if any signals is **pending**. 06

b) The sleep() API is implemented using the alarm() and pause() API. Write a C program to **emulate sleep() API.** 04

c) Inspect the process of error logging **for SVR4 streams log driver.** 10

UNIT - V

6 a) Differentiate between **pipes and fifos.** 06

b) Demonstrate the use **of *popen*() and pclose() to execute the command *ls* * in order to obtain a list of files in the current directory.** 08

c) Define socket? Discuss how to **create and destroy a socket.** 06

OR

7 a) Two processes communicate with each other. Design a program to show IPC through **message queues**. 10

b) Illustrate how FIFO can be used to **implement client-server communication** model, with a neat diagram. 10

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