	B.M.S COLLEGE OF ENGINEERING, BANGALORE-19 (Autonomous Institute, Affiliated to VTU) **Computer Science & Engineering**

INTERNALS-3		
Course Code : 20CS5PCUSP	**Course Title : Unix Shell and System Programming**	
Semester : 5 A/B/C/D	**Maximum Marks: 40**	**Date: 18-01-2022**
Faculty Handling the Course:	Dr. Kayarvizhy N, Dr. Nandhini Vineeth , Dr.Manjunath D R	
Instructions: ***Internal choice is provided in Part C.***		

PART-A

Total 5 Marks (No Choice)

No.	Question	Marks
1	Explain different process termination methodologies?	5

PART-B

Total 15 Marks (No Choice)

No.	Question	Marks
2a	If you open a file for read–write with the append flag, can you still read from anywhere in the file using lseek? Can you use lseek to replace existing data in the file? Write a program to verify this.	**5**

2b	Analyse below code using API used and fill up the blanks to get the following output. Identify the functionality of the program
	
	#include <_____>
	#include <unistd.h>
	#include <stdlib.h>
	int main ()
	{
	int fd;
	struct flock my_lock.
	my_lock.l_type = F_WRLCK;
	my_lock.l_whence - SEEK_SET;
	my_lock.l_start = 0;
	my_lock.l_len = 10;
	fd = open ("locktest", _____);
	if(fcntl(fd, F_SETLKW, &my_lock) == ___){
	perror("parent: locking"); exit(1);
	}
	printf("parent: locked record\n");
		5

```
switch(fork())
{
case ____:
perror("fork");
exit(1);
case 0:
my_lock.l_len = 5;
if( fcntl(fd, F_SETLKW, &my_lock) == ___)
{
perror("child: locking"); exit(1);
}
printf("child: locked\n");
printf("child: exiting\n");
exit(0);
sleep(5);
printf("parent: exiting\n");
exit(0);
```

OutPut

parent: locked record
parent: exiting
child: locked
child: exiting

2c — **3 + 2=5 Marks**

I) Analyze and write the functionality of following codes

a)

```
if((fd = open("/tmp/fifo", O_WRONLY | O_NONBLOCK)) == -1)
 perror("open on fifo");
```

b)

```
main(int argc, char **argv, char **envp)
{
 while(*envp)
       printf("%s\n",*envp++);
}
```

c)

```
while(waitpid(pid, &status, WNOHANG) == 0)
{
      printf("Still waiting...\n");
      sleep(1);
}
```

II) What happens if the *cmdstring* executed by popen with a *type* of "r" writes to its standard error?

PART- C

Total 20 Marks (Choice between question 3a & 3b, choice between question 4a & 4b)

3a	Write C Program to illustrates how to open files and perform following use cases: a) create a non-existent file b) create" an existing file c) fail to create an existing file d) open an existing file e) fail to open a non-existing file f) truncate an existing file g) create and remove symbolic link to a file.	**10**
	OR	
3b	Write a C program to create a two files file and file1, set umask as 077 and perform below operations using suitable system calls. a) turn off owner read permissions and turn on setgid for file. b) set absolute mode to rw-r--r—for file1.	**10**
4a	Write a C/C++ program to illustrates of exit handlers and also Illustrate exiting at different times by invoking this program as a) ./a.out exit handlers invoked after return from main b) ./a.out 1 exit handlers invoked from within func c) ./a.out 1 2 no exit handlers invoked d) ./a.out 1 2 3 we call abort(3), no exit handlers invoked	**10**
	OR	
4b	Write a C/C++ program that illustrates after fork(), the child process has a copy of the file descriptors from the parent process pointing to the same file table entries, meaning operations(read and write) on the fd in one affect the other.	**10**

ALL THE BEST