

Total No. of Questions : 7]

SEAT No. :

**P564**

[Total No. of Pages : 3

[5840]-201

**M.Sc. (Computer Science)**

**CSUT -121 : ADVANCED OPERATING SYSTEM**

**(2029 Pattern) (Semester-II)**

*Time : 3 Hours]*

*[Max. Marks : 70*

*Instructions to the candidates:*

- 1) *Q. 1 is compulsory.*
- 2) *Solve any five questions from Q. 2 to Q. 7.*
- 3) *Questions from 2 to 7 carry equal marks.*

**Q1)** Solve any five of the following:

**[10]**

- a) Explain sigpromask ( ) function
- b) Comment “In linux the files are usually accessed via filenames”.
- c) What is symbolic link?
- d) Explain sticky bit.
- e) What is orphan & zombie process
- f) “ Random access I/O is not possible for pipe files”. Justify.

**Q2)** Attempt the following.

**[12]**

- a) i) State & explain setjmp ( ) & longjmp ( ) functions. **[4]**  
ii) What is a) Block special file b) Character special file c) Socket file. **[3]**
- b) Explain scenario of delayed write buffer allocation with suitable diagram. **[5]**

**Q3)** Attempt the following.

**[12]**

- a) i) Explain wait ( ), wait pid ( ), wait 3 ( ), wait 4 ( ) system call with syntax. **[4]**  
ii) Describe major responsibilities handled by kernel. **[3]**

**P.T.O.**

- b) Explain the behaviour of following C program [5]

```
#include < signal.h >
main ()
{
    register int i ;
    setpgrp ( ) ;
    for (i=0; i<10; i++)
    {
        if (fork ( ) ==0)
        {
            if (i & 1)
            setgrp ( ) ;
            printf (“pid= %d pgrp=%d”, getpid ( ), getpgrp ( ) );
            pause ( ) ;
        }
    }
    kill (0, SIGINT);
}
```

**Q4)** Attempt the following. [12]

- a) i) Explain the behaviour of following C program. [4]

```
main ()
{
    int fd;
    char buff [1024];
    fd=create (“Try”, 0666);
    lseek (fd, 2000,2);
    write (fd, “Good morning”, 5)
    close (fd) ;
    fd=open (“ Try” , O_ RDONLY);
    read (fd, buff, 1024);
    read (fd, buff, 1024);
    read (fd, buff, 1024);
}
```

- ii) Explain the data structure used for demand paging. [3]

- b) Write a program to demonstrate race condition in catching signal. [5]

**Q5) Attempt the following. [12]**

- a) i) Explain [4]
- 1) Read ( )
  - 2) write ( )
  - 3) read v ( )
  - 4) write v ( ) with syntax
- ii) Explain the purpose of nice ( ), getpriority ( ) & setpriority ( ) system call. [3]
- b) How to manipulate memory? Explain memset ( ), memchr ( ), memcmp ( ), & memmove ( ) functions. [5]

**Q6) Attempt the following. [12]**

- a) i) Explain advantages & disadvantages of mmap ( ). [4]
- ii) Give the difference between dup & dup 2 system call with syntax. [3]
- b) Write a note on “ Advanced signal management”. [5]

**Q7) Attempt any two of the following. [12]**

- a) Explain following system calls with syntax.
- 1) alarm ( )
  - 2) pause ( )
  - 3) raise ( )
- b) What is process? Draw & explain in detail process transition diagram of process.
- c) Write a C program that prints size of a file for each command line argument. [5]

