CBCS SCHEME

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17CS744

# Seventh Semester B.E. Degree Examination, June/July 2023
## Unix System Programming

Time: 3 hrs. Max. Marks: 100

***Note: Answer any FIVE full questions, choosing ONE full question from each module.***



### Module-1

1 a. Explain the major differences between ANSI C and K&R C. **(08 Marks)**

b. Write a C/C++ POSIX complaint program that prints the POSIX defined configuration options supported on any given system using feature test macros. **(08 Marks)**

c. Explain the different subsets of POSIX standards. **(04 Marks)**

**OR**

2 a. Explain the functions used to query configuration limits at run time, with program. **(10 Marks)**

b. Explain the common characteristics of API and list any six commonly occur error status code along with their meaning. **(10 Marks)**

### Module-2

3 a. What is file? Explain types of files with command examples. **(07 Marks)**

b. Explain UNIX kernel support for files with neat sketch. **(07 Marks)**

c. Write any three differences between :
i) Hard links and Soft links
ii) C Stream pointers and file descriptor **(06 Marks)**

**OR**

4 a. Explain the following APIs with prototype:
(i) open( ) (ii) lseek( ) (iii) fcntl( ) **(12 Marks)**

b. Explain File and Record locking. **(08 Marks)**

### Module-3

5 a. What are the different ways of process termination? Explain with a neat diagram how a 'C' program is started and terminated. **(12 Marks)**

b. Write a C/C++ program to display:
i) Command line arguments
ii) Environment variables. **(08 Marks)**

**OR**

6 a. Explain with a neat diagram memory layout of a C program. **(06 Marks)**

b. Explain setjmp and longjmp functions with their prototypes. **(06 Marks)**

c. What is job control? List and explain three forms of support needed for job control with neat diagram. **(08 Marks)**

### Module-4

7 a. What is a signal? Explain with a program how to setup a signal handler. **(10 Marks)**

b. What is a daemon process? Explain daemon characteristics and basic coding rules. **(10 Marks)**

**OR**

8 a. Explain kill( ) API and alarm( ) API in brief. **(08 Marks)**

b. What is error logging? With neat diagram discuss the error logging facility in BSD. **(08 Marks)**

c. Write a C/C++ program to illustrate the use of 'sigaction'. **(04 Marks)**

## Module-5

9 a. What are pipes? What are their limitations? Write a C program that sends "hello world" message to the child process through the pipe. The child on receiving this message should display it on the standard output. **(08 Marks)**

b. With a neat block diagram, explain how FIFO can be used to implement client server communication model. **(08 Marks)**

c. Explain passing file descriptors. **(04 Marks)**

**OR**

10 a. What is semaphore? Explain semget( ), semctl( ) and semop( ) API's in detail. **(10 Marks)**

b. Define message queue. Discuss how it is useful in IPC. **(10 Marks)**

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