

# CBCS SCHEME

15CS744



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Seventh Semester B.E. Degree Examination, July/August 2022

## UNIX System Programming

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Compare and explain: ANSI C and K and R C with examples. (08 Marks)
- b. Explain feature test macros in POSIX system. (05 Marks)
- c. Define different versions of POSIX. (03 Marks)

OR

- 2 a. What are API common characteristics? List any six values of the global variable `errno` along with their meanings. (08 Marks)
- b. Define FIPS. What are the restrictions specified to POSIX.1 by FIPS standard? (08 Marks)

### Module-2

- 3 a. Explain the commands to create different file types supported by UNIX. (06 Marks)
- b. Explain UNIX Kernel Support for files with a neat sketch. (06 Marks)
- c. Give any four differences between hard link and symbolic link files. (04 Marks)

OR

- 4 a. Explain the following API's with their prototypes:
  - (i) `open ()`
  - (ii) `read ()`
  - (iii) `write ()`
  - (iv) `close ()`(08 Marks)
- b. Write C/C++ command line program to implement UNIX MV Command. (04 Marks)
- c. Create a write lock for a region behind 5 bytes from current file offset position to the end of the file. Consider file size is 100 bytes and current file offset is at 10 bytes. (04 Marks)

### Module-3

- 5 a. Write a C/C++ program to display:
  - (i) Command line arguments
  - (ii) Environment variables.(08 Marks)
- b. What is the use of `setjmp` and `longjmp` functions? Illustrate them with simple program. (08 Marks)

OR

- 6 a. Explain in detail the family of `exec` functions. (08 Marks)
- b. What is race condition? Mention and explain routines to avoid race condition. (08 Marks)

### Module-4

- 7 a. Define Daemon process. Discuss the basic coding rules of the Daemon process. (08 Marks)
- b. What is signal mask of a process? Explain `sigprocmask` function along with its prototype. (08 Marks)

OR

- 8 a. Explain in detail (i) Kill ( ) (ii) alarm ( ) with programs if necessary. (08 Marks)  
b. Explain Sigaction API with its prototype. (08 Marks)

**Module-5**

- 9 a. What is FIFO? With a neat figure show FIFOs are used for client server communication. (08 Marks)  
b. What is message queue? Write and explain functions to use message queue for sending and receiving data. (08 Marks)

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OR

- 10 a. What is inter-process communication? List any four mechanism (IPC). Also write C/C++ to create child process to print a message. (08 Marks)  
b. Explain shared memory as an Inter-Process Mechanism (IPC). (08 Marks)

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