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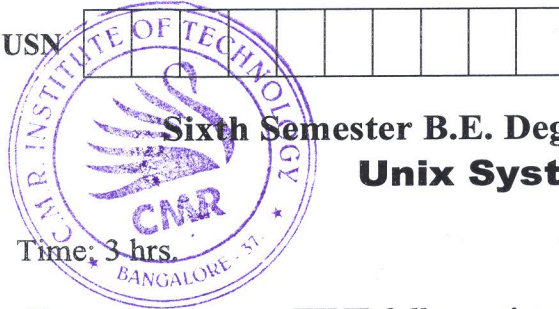# Unix System Programming

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting at least TWO questions from each part.*

PART – A

1 a. What is the need for standardization of unix C and programming languages? Bring out major difference between ANSI C & K & R 'C' with examples. **(10 Marks)**
   b. Write a C/C++ POSIX compliant program to check the following limits :
      (i)   Number of clock ticks.
      (ii)   Maximum number of child processes.
      (iii) Maximum path length.
      (iv)   Maximum characters in a file name.
      (v)   Maximum number of open files per process. **(06 Marks)**
   c. Explain any 4 error status codes. **(04 Marks)**

2 a. Explain the different file types available in Unix or Posix systems. Give some commands to create each of them. **(10 Marks)**
   b. Discuss with a neat diagram, the kernel support for files and also the data structures it maintains for its files. **(08 Marks)**
   c. List all the file attributes. **(02 Marks)**

3 a. Explain the following API's along with their prototype definitions :
      (i)   Open
      (ii)   fStat
      (iii) lSeek
      (iv)   mknod **(08 Marks)**
   b. Explain how fcntl API can be used for file and record locking. **(08 Marks)**
   c. Give the hierarchy structures of the file classes. **(04 Marks)**

4 a. Explain briefly the memory layout of C program. **(05 Marks)**
   b. What are Setjmp ( ) and longjmp ( ) function? Explain with a program of their usage. **(10 Marks)**
   c. What is race condition? Write a C/C++ program to illustrate Race condition. **(05 Marks)**

PART – B

5 a. What is job control? Explain job control features with the help of a neat diagram. **(10 Marks)**
   b. Giving the prototype, explain different variants of Exec system calls. **(10 Marks)**

6 a. What is Signal? Discuss any five POSIX defined signals. Explain how to setup a signal handler. **(10 Marks)**

b. Discuss deamon characteristics and coding rules. **(10 Marks)**

7 a. Explain how FIFO's are used in IPC. Discuss with a example client/server communication using FIFO. **(10 Marks)**

b. Explain different calls available to create and manipulate semaphores. **(05 Marks)**

c. Explain popen( ) and pclose( ) functions with their prototypes. **(05 Marks)**

8 a. What is shared memory concept? How it is used for implementation of IPC with an example. **(10 Marks)**

b. Explain the following :
   (i) Passing file descriptors between processes.
   (ii) Client-server communication functions. **(10 Marks)**

* * * * *