AMIETE – CS/IT (NEW SCHEME)

Time: 3 Hours   **JUNE 2012**   Max. Marks: 10...

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.
- **Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.**
- **The answer sheet for the Q.1 will be collected by the invigilator after 45 Minutes of the commencement of the examination.**
- **Out of the remaining EIGHT Questions, answer any FIVE Questions. Each question carries 16 marks.**
- **Any required data not explicitly given, may be suitably assumed and stated.**

Q.1   **Choose the correct or the best alternative in the following:**   **(2×10)**

a. Absolute pathname in Unix starts from

   (A) Current working directory name **(B)** /
   (C) \   **(D)** ~

b. By convention, UNIX system shells associate file descriptor 0 with the standard _____ of a process, file descriptor 1 with the standard _____ file descriptor 2 with the standard _____

   (A) error, input, output   **(B)** output, input, error
   (C) input, output, error   **(D)** None of the above

c. A file's offset can be greater than the file's current size, in which case the next write to the file will extend the file. This is referred to as creating a _____ in the file.

   (A) add   **(B)** append
   (C) hole   **(D)** None of the above

d. If 25 bytes remain until the end of file and we try to read 60 bytes, read returns 25. The next time we call read, it will return_____.

   (A) 0   **(B)** -1
   (C) 35   **(D)** None of the above

e. Which of the following is not stored in the i-node of a file?

   (A) Name of the file   **(B)** Size of the file
   (C) Type of the file   **(D)** Number of links to the file

f. Which of the following is true about Signals?

    (A) they are software interrupts
    (B) they provide a way of handling synchronous events
    (C) none of the above
    (D) both **(A)** and **(B)**

g. There are _____ permission bits for each file.

    (A) 8   **(B)** 11
    (C) 10   **(D)** 9

h. The st_size member of the stat structure contains the size of the file in _____

    (A) bytes   **(B)** bits
    (C) kilo bytes   **(D)** mega bytes

i. FIFOs are sometimes called _____

    (A) unnamed pipes   **(B)** unnamed signals
    (C) unnamed stacks   **(D)** named pipes

j. The goal of the buffering provided by the standard I/O library is to use the minimum of _____

    (A) read calls   **(B)** write calls
    (C) both **(A)** & **(B)**   **(D)** none of the above

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

Q.2 a. Describe User identification by writing a paragraph each on User ID, Group ID and Supplementary Group ID. What system calls can be used to determine the user ID and group ID of the process. **(9)**

      b. 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 lseek to replace existing data in the file? Explain. **(7)**

Q.3 a. Some versions of the finger(1) command output "New mail received …" and "unread since …." Where … are the corresponding times and dates. How can the program determine these two times and dates? **(4)**

      b. Examine the archive formats by cpio(1) and tar(1) commands. How many of the three possible time values are saved for each file? When a file is restored, what value do you think the access time is set to, and why? **(12)**

Q.4   a. How would you use the fsync function with standard I/O stream?

b. Describe three ways to position a standard I/O stream.   **(9)**

c. What is stored in /etc/passwd file? Explain.   **(4)**

Q.5   a. Write a program to show how changes to variables in a child process do not affect the value of the variables in the parent process.   **(6)**

b. If you execute your program of Q.5(a), will you get same output every time? Justify your answer.   **(5)**

c. Explain the use of 'exec' functions.   **(5)**

Q.6   a. What's wrong with the code below?
```
int f1(int val)
{
        int     *ptr;
        if      (val == 0)      {
        int     val;
        val = 5;
        ptr = &val;
                }
        return(*ptr  +  1);
}
```
          (5)

b. What is a job? What is the purpose of job control and what are three forms of support required by job control?   **(5)**

c. What are the three characters which generate signals to the foreground process group and what signals are generated corresponding to each of these characters?

          (6)

Q.7   a. What are Signals? What are the conditions that can generate signals?   **(10)**

b. What are the three options available to us when a signal occurs?   **(6)**

Q.8   a. Specify any four basic rules to code a daemon to prevent unwanted interactions from happening.   **(8)**

b. Briefly explain the canonical and noncanonical modes of input processing.   **(8)**

Q.9   a. What happens if the *cmdstring* executed by *popen* with *type* of "r" writes to its standard error?   **(4)**

b. Since *popen* invokes a shell to execute its *cmdstring* argument, what happens when *cmdstring* terminates?   **(6)**

c. Unless a file contains sensitive or conditional data, allowing other users to read the file causes no harm. But what happens if a malicious process reads a message from a message queue that is being used by a server and several clients? What information does the malicious process need to know to read the message queue?   **(6)**