ROLL NO._____

Code: AC71/AT71/AC124/AT124 Subject: UNIX SYSTEMS PROGRAMS

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours **JUNE 2017** **Max. Marks: 100**

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. The part of the Unix operating system that interacts with the hardware is called
(A) GNU project **(B)** The kernel
(C) The shell **(D)** Linux

b. Which is the earliest and most widely used shell that came with the UNIX system?
(A) C shell **(B)** Korn shell
(C) Bourne shell **(D)** Smith shell

c. The command to count the number of files in the current directory by using pipes, is?
(A) ls | wc -w **(B)** ls |wc
(C) ls -l | wc -l **(D)** ls | ws -c

d. Which command is used to delete all files in the current directory as well as all files and sub-directories in its subdirectories?
(A) rm* **(B)** rm all
(C) rm – r* **(D)** rm*.*

e. Which shell's wild-cards is used to match a single character?
(A) * **(B)** ?
(C) ! **(D)** #

f. Personal run control files are stored in
(A) The /etc directory **(B)** The users home directory
(C) The /bin directory **(D)** The /home directory

g. A file with permission status of RWXR_XR__ indicates
(A) The owner has all permissions, the group has only Read
(B) The owner has only Read and Execute permissions.
(C) The owner has all permissions, the group has only Read and Execute permissions.
(D) The group has all permissions, the owner has only Read and Execute permissions.

h. Which command is used to display the end of the file?
(A) head -r **(B)** eof
(C) bof **(D)** tail

i. New users are added into this file
(A) /passwd **(B)** /usr
(C) /etc/passwd **(D)** /home

j. The "nice" command is used to
(A) Communicate with other user's processes
(B) Improve relationships of the states of processes
(C) Create processes with high priority
(D) Change priority levels of running processes

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

Q.2 a. What is UNIX operating system? Explain the architecture of UNIX operating system. **(6)**

b. What is the difference between UNIX and LINUX? Point out any five major differences. **(5)**

c. List out the five main functions of file I/O on a UNIX system in brief. **(5)**

Q.3 a. Write short notes on the following:
(i) chmod & fchmod command (ii) Sticky bits **(2x5)**

b. What is symbolic link? How it is different from hard link? Give any two usage of it. **(6)**

Q.4 a. What is the goal of the buffering provided by the standard I/O library? Discuss the various types of buffering. **(6)**

b. What do you understand by shadow password? Why it is considered as a one-way password? **(5)**

c. What is a group field? Where does it located? List the fields contained in group field. **(5)**

Q.5 a. How the fork( ) function is used to create a new process? Give an example of sharing of open files between parent and child process after fork( ). **(8)**

b. Explain the concept of Zombie process? What happens when a process that has been inherited by init( ) terminates? **(8)**

Q.6 a. Explain, how a C program is started and terminated with a suitable diagram. **(8)**

b. Describe the three types of memory allocation techniques in detail. **(8)**

Q.7 a. When a program is executed, what is the status of all the signals? Give one example, how an interactive shell treats the interrupt and quit signals for a background process? **(8)**

b. Write short notes on the following: **(4×2)**
(i) signal( ) function (ii) abort( ) function

Q.8 a. What is a Daemon? List out the basic rules to code a daemon that can prevent unwanted interactions from happening. **(8)**

b. Give an overview on Terminal I/O along with its two modes of operation. **(4)**

c. Define the following: **(2×2)**
(i) stty command (ii) baud rate function

Q.9 a. Write a program that invokes the uppercase/lowercase filter to read the commands. **(8)**

b. Why FIFO is sometimes called as named pipe? Explain it with a suitable example. **(8)**