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

AMIETE – CS/IT (Current & New Scheme)

Time: 3 Hours   **DECEMBER 2016**   **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. Which command is used to set terminal IO characteristic?
      (A) tty   **(B)** ctty
      (C) ptty   **(D)** stty

   b. Which command is used to display the operating system name?
      (A) os   **(B)** Unix
      (C) kernel   **(D)** uname

   c. Which command is used to display the unix version?
      (A) uname-r   **(B)** uname-n
      (C) uname-t   **(D)** kernel

   d. Using which command you find resource limits to the session?
      (A) rlimit   **(B)** ulimit
      (C) setrlimit   **(D)** getrlimit

   e. Which symbol will be used with grep command to match the pattern pat at the beginning of a line?
      (A) ^pat   **(B)** $pat
      (C) pat$ **(D)** pat^

   f. Which of the following keys is used to replace a single character with new text?
      (A) S   **(B)** s
      (C) r   **(D)** C

   g. Which of the following is not a communication command?
      (A) write   **(B)** mesg
      (C) mail   **(D)** grep

   h. Which command is used to concatenate all files beginning with the string 'emp' and followed by a non-numeric characters?
      (A) cat emp[!0-9]   **(B)** more [emp][!0-9]
      (C) cat emp[x-z]   **(D)** cat emp[a-z]

   i. Which command is used to display the characteristics of a process?
      (A) pid   **(B)** du
      (C) ps   **(D)** au

j. The cp command uses:
    (A) standard input file
    (B) standard output file
    (C) both input and output file
    (D) neither standard input nor standard output file

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

Q.2 a. Explain in detail about the working of an UNIX file system. **(8)**

b. With syntax, explain the usage of following commands: **(4×2)**
    (i)   creat function
    (ii) close function
    (iii) lseek function
    (iv) read function

Q.3 a. Explain the following:
    (i)   stat, fstat and lstat function
    (ii) chown, fchown and lchown function **(4 x 2)**

b. Explain the different file types in UNIX. **(8)**

Q.4 a. Explain the various types of UNIX shells and their characteristics. **(6)**

b. Explain Zombie and orphan process with reference to UNIX. **(6)**

c. Explain the task of crontab and cmp commands. **(4)**

Q.5 a. What do you mean by Race condition. **(8)**

b. Explain the following: **(4 x 2)**
    (i) fork function
    (ii) exit functions

Q.6 a. Differentiate between ERE and BRE. Give suitable examples in support of your answer. **(8)**

b. What does the command "grep" do? What are the various options? Give the syntax of the command. **(4)**

c. What are the file descriptors for Standard Input, Standard Output and Standard Error? **(4)**

Q.7 Explain the difference between **(4 x 4)**
    (i)   kill and raise function
    (ii) alarm and pause function
    (iii) reliable & unreliable signals
    (iv) abort & system function

Q.8 a. Write a shell script to calculate the mean and variance of a given series of a number. **(8)**

b. Write a shell script which will re-direct the output of the date command without the time into a file. **(8)**

Q.9 Explain the following in detail **(4 x 4)**

    (i) Semaphores   (ii) Coprocesses
    (iii) Message Queues   (iv) FIFO