# MCA/M09                                    6251

## Linux and Shell Programming

### Paper : MCA-403

Time : Three Hours]                                    [Maximum Marks : 50

**Note :–**   Attempt **FIVE** questions in all, selecting at least **ONE** question from each unit.

### UNIT–I

1.   (a)   Explain different ways to log in and log out in a Linux Operating System. How user accounts can be created and deleted in Linux ?                                                                              4

   (b)   Discuss the following commands in Linux/Unix :-

   (i)   pwd   (ii)   mv   (iii) file   (iv)   chmod   (v)   touch   (vi)   tee.

                                                                              6

2.   (a)   What do you understand by a file in Linux/Unix ? Explain various categories of file. Also explain the file system in Linux/Unix.                                                                              5

   (b)   Discuss various control structures in shell.                         5

3.   (a)   Write a shell script to find income tax having name, employee no., gross salary per annum, sex, deductions having rebate as input. You have to calculate income tax on the basis of following rules :

   If the employee is male

   Tax = nil if salary < Rs. 1,50,000/-per annum

   Tax = 10% of salary if salary <3,00,000/-per annum

   Tax 20% of salary if salary <5,00,000/- per annum

   Tax = 30% of salary if salary > = 5,00,000/-per annum

If the employee is female

Tax=nil if salary < Rs. 1,80,000/- per annum

Tax = 10% of salary if salary < 3,00,000/- per annum

Tax =20% of salary if salary <5,00,000/-per annum

Tax = 30% of salary if salary > = 5,00,000/- per annum

Maximum deduction on which rebate is allowed is Rs. 1,00,000/ per annum. Salary can be calculated as :

Salary = Gross Salary-Deductions having rebate.     7

(b) Explain the following Environment variables :

(i) PATH (ii) HOME (iii) LOGNAME (iv) PSI (v) TERM (vi) PS2.     3

## UNIT–II

4. (a) What do you mean by grep ? Explain alongwith various option with the help of examples. Differentiate between grep, egrep, and fgrep.     5

(b) Explain the following regular expression :

(i) *   (ii) []   (iii) ^ (iv) TRE (v) +     5

5. (a) Discuss any five Built-in functions in awk with the help of examples.     5

(b) Explain the concept of List and Arrays in Perl. Also discuss the array handling function Split () and join ().     5

6. (a) What do you understand by a process in Linux ? How a process is created and removed in Linux/Unix ?     5

(b) Write a short note on job control. Explain at, batch cron and time in Linux.     5

7. (a) How security can be maintained in Linux ?     5

(b) Write a short note on Network files in Linux.     5

## UNIT–III

8. What do you understand by Signals ? Discuss various signals that can be handled and signals that cannot be handled ? Write and explain a program that sets a handler for SIGTERM rather than let the program die when a signal is received.     10

9. (a) What do you mean by optimization with gcc ? Explain various advantages and disadvantages of optimization with the help of an example.     5

(b) Differentiate between dynamic and static memory.     5

10. (a) Discuss the various principles of makefile. Design and explain a final makefile.     7

(b) Write a short note on Soname.     3