SLIATE

SRI LANKA INSTITUTE OF ADVANCED TECHNOLOGICAL EDUCATION
(Established in the Ministry of Higher Education, vide in Act No. 29 of 1995)

Higher National Diploma in Information Technology
Second Year, Second Semester Examination – 2020
HNDIT2402 – Free and Open Source Systems

Instructions for Candidates:
Answer four (04) Questions, **including question 01**.

No. of questions: 05
No. of page   : 04
Time   : 02 Hours

Question 01

I. Select the most appropriate answer.

i) _____ command is used to print your machine hardware name?

   a. uname -s   c. uname -i

   b. uname -r   d. uname -a

ii) Linux default shell is set in the_____file.

   a. /etc/passwd   c. /home

   b. /etc/shells   d. /etc/bash

iii) _____ is a software documentation available in Linux operating systems.

   a. User Interface   c. Software Documentation

   b. Text Editor   d. Web Page

iv) The command, _____ is used to give a snapshot of the current processes in Linux systems.

   a. sh   c. ps

   b. top   d. now

v) _____ file is used for allocating system rights to its users.

   a. etc   c. nano

   b. sudores   d. samba

vi) To insert text in a file, Vi editor should be in _____.

   a. Command mode   c. Ex mode

   b. Insert mode   d. Visual mode

vii) _____ is **NOT** a shell type available in Linux.

    a. sh   c. ksh

    b. bash   d. konn

viii) 'chgrp' command is used to change the _____ of a file or directory.

    a. super user   c. permissions

    b. group owner   d. group mode

ix) The command, _____, can quit the vi editor without making any changes in the file.

    a. wq!   c. w!

    b. qw!   d. q!

x) The default MTA on the RedHat Linux distribution is, _____.

    a. Postfix   c. Snailmail

    b. Sendmail   d. Squirralmail

<div align="right">(2*10=20 Marks)</div>

II. State whether the following statements are true or false.

    a.   GNU is a Kernel initiated by Richard Stallman.

    b.   Cron utility allows tasks to be automatically run in the background.

    c.   The 'yum' command stands for 'Yellowdog Updater Method'.

    d.   A system call is, how a program requests a service from an operating system's kernel.

    e.   Samba server is capable of authenticating Windows domain logins.

<div align="right">(5 marks)</div>

<div align="right">**[Total 25 Marks]**</div>

Question 02

I. Define the term Free and Open Source Software   (02 Marks)

II. What is Linux shell? Name three types of shells in Linux.   (05 Marks)

III. Name each component of the following figure that represent the Linux System Architecture.   (04Marks)
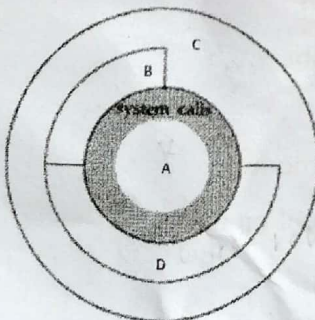
IV. State the difference between copyright and copyleft   (04 Marks)

V. Briefly explain what is meant by dual licensing   (04 Marks)

VI. Write short notes on the following topics   (06 Marks)

       a. GNU Project   b. Foss Business Model

[Total 25 Marks]

Question 03

I. Answer each of the following questions assuming that you have opened a Linux terminal and **you are in the Home directory**.

     [root@localhost home]#

     a. Create a new user account as 'student' with the password 'student@123'.

                                                            (03 Marks)

     b. Add the 'student' to the existing group named 'HNDIT'   (02 Marks)

     c. Draw the folder structure created by the following command

         [root@localhost home]# mkdir -p Linux/{Debian,Redhat,Slackware}

                                                              (02 Marks)

     d. Write a command to view the content of the Linux folder   (02 Marks)

     e. Create the following directory structure inside the Debian directory   (02 Marks)

     f. Copy 'Mint' directory to 'RedHat' directory   (02 Marks)

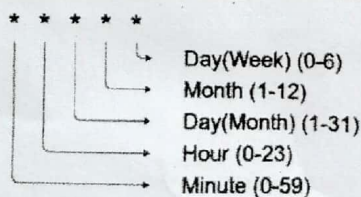   g. Rename the copied 'Mint' directory to 'CentOs'.   (02 Marks)

II. Briefly explain the purpose of ps and top commands in Linux process management.

                                                               (04 Marks)

III. Briefly explain the steps to create, edit and save a text document using Vi editor.

                                                               (06 Marks)

[Total 25 Marks]

Question 04

I. What stands for Linux 'tar'?   (02 Marks)

II. The command, **'tar'** can be used for creating compressed archives. How to use the same command to extract the compressed archive named 'compressed_archive.tar'.

                                                             (03 Marks)

III. A crontab file has five fields as given below for specifying day, date and time followed by the command to be run at that interval.

```
* * * * *
|  |  |  |  |
|  |  |  |  └─> Day(Week) (0-6)
|  |  |  └────> Month (1-12)
|  |  └───────> Day(Month) (1-31)
|  └──────────> Hour (0-23)
└─────────────> Minute (0-59)
```

     a. Briefly explain the advantage of using **'cron'** utility in Linux   (03 Marks)

b. Write whether the command is used to view the crontab entries in a Linux system. (02 Marks)

c. Write the command to run a backup in every 15 minutes. [Hint: Use '/root/backup.sh' command to run the backup] (02 Marks)

d. What is the schedule for executing the backup according to the following crontab entry? (03 Marks)

IV. Briefly explain the file and directory permissions and ownerships used in the Linux security model. (6 Marks)

V. Consider a file named 'hndit.txt'. Write the commands using **symbolic mode** for changing its permissions as given below. (4 Marks)

    a. Give read and executable permission to all users

    b. Give the group, and user read and write permission but remove execute permissions

[Total 25 Marks]

Question 05

I. Write two advantages of using a proxy server in a network. (02 Marks)

II. Mention the functionality of each of the following servers (06 Marks)

    a. DHCP Server

    b. Mail Server

    c. File server

III. Briefly explain the functionality of Postfix and Dovecot in facilitating email servers.

(04 Marks)

IV. Compare and contrast IMAP and POP (04 Marks)

V. Briefly explain about the SMB protocol (03 Marks)

VI. Write the command to execute the following operations in configuring the samba server

(06 Marks)

    a. Install samba server

    b. Restarting the server

    c. Check the status of the server

[Total 25 Marks]