



## BRAINWARE UNIVERSITY

Library  
Brainware University  
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Term End Examination 2024-2025

Programme – M.Sc.(ANCS)-2024

Course Name – Linux System Administration

Course Code - MNC10103

( Semester I )

Full Marks : 60

Time : 2:30 Hours

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

### Group-A

(Multiple Choice Type Question)

1 x 15=15

1. Choose the correct alternative from the following :

- (i) Identify the core component of the Linux operating system.
  - a) Kernel.
  - b) Inode.
  - c) Command Line Interface.
  - d) Desktop Environment.
- (ii) Select the purpose of the /etc/passwd file in Linux.
  - a) Stores user passwords
  - b) Stores user account information
  - c) Stores system logs
  - d) Stores user permissions
- (iii) Name the boot loader used in most Linux distributions.
  - a) GRUB
  - b) LILO
  - c) Syslinux
  - d) PXE
- (iv) Classify the purpose of the mount command in Linux.
  - a) To load a kernel module
  - b) To attach a file system
  - c) To start a background process
  - d) To initiate network services
- (v) Select how a DHCP server functions within a network.
  - a) Assigns IP addresses
  - b) Resolves domain names
  - c) Filters incoming traffic
  - d) Manages user accounts
- (vi) Classify the function of the superblock in a Linux file system.
  - a) Manages the boot process
  - b) Tracks the location of data blocks
  - c) Stores the boot loader
  - d) Manages user accounts
- (vii) Choose the purpose of the MBR (Master Boot Record).
  - a) Storing partition information
  - b) Managing user permissions
  - c) Resolving IP addresses
  - d) Encrypting file systems
- (viii) Choose the command used to change the ownership of a file in Linux.
  - a) chmod
  - b) chown
  - c) ls
  - d) mv
- (ix) Indicate the correct command to update the package index on a Linux system.

- a) yum update  
c) rpm -i
- (x) Classify the purpose of NIC teaming in Linux.
- a) To bond multiple network interfaces for redundancy and performance  
c) To assign multiple IP addresses to one interface
- (xi) Classify the purpose of the passwd command in Linux.
- a) Changes the user password  
c) Changes the user group
- (xii) Classify the purpose of the iptables command in Linux.
- a) Configures firewall rules  
c) Configures user accounts
- (xiii) Choose the effectiveness of using chroot to secure a web server environment.
- a) Completely isolates the server from the host  
c) Reduces performance due to overhead
- b) apt-get install  
d) yum install
- b) To create virtual network interfaces  
d) To manage firewall rules
- b) Changes the user ID  
d) Changes the user's shell
- b) Configures DNS settings  
d) Configures network interfaces
- b) Prevents unauthorized access to critical system files  
d) Only effective if the chroot environment is correctly configured
- (xiv) Analyze the impact of using the kill -9 command to terminate processes in a Linux environment.
- a) Safely terminates the process and frees resources  
c) Sends a termination signal allowing process cleanup
- b) Forces termination, potentially causing data loss  
d) Moves the process to the background
- (xv) Classify the impact of disabling NetworkManager on a Linux server used for web hosting.
- a) Improves server stability by reducing network management overhead  
c) Has no impact on static network configurations
- b) Causes loss of network connectivity  
d) Results in better performance for high-traffic servers

### Group-B

(Short Answer Type Questions)

3 x 5=15

2. Summarize the steps to create 3 users with 1 primary group. (3)
3. List the components of the Linux file system structure. (3)
4. Explain the significance of the /etc/shadow file in user authentication. (3)
5. Analyze the importance of the Superblock in Linux file systems and its role in system recovery. (3)
6. Analyze the Linux boot process for potential points of failure. (3)

OR

- Illustrate the concept of Linux shell . (3)

### Group-C

(Long Answer Type Questions)

5 x 6=30

7. Analyze the performance differences between ext3 and ext4 file systems in handling large files. (5)
8. Evaluate the effectiveness of SELinux in securing a Linux system in comparison to other access control models. (5)
9. Analyze the role of kernel modules in enhancing the functionality of the Linux kernel. (5)

10. Analyze the impact of open-source licensing on the widespread adoption of Linux in comparison to proprietary software. (5)
11. Describe the boot process of a Linux system, step by step. (5)
12. Critique the performance of RAID 1 and RAID 5 in terms of redundancy and read/write speeds. (5)

OR

Evaluate the advantages of using Logical Volume Management (LVM) for managing storage in Linux over traditional partitioning. (5)

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