Syllabus for the post of JUNIOR TECHNICAL ASSISTANT (School of Liberal Arts)
WRITTEN TEST & SKILL TEST

Linux Server Administration:	
Understand and use essential tools	- Access a shell prompt and issue commands with correct syntax - Use input-output redirection (>, >>, |, 2>, etc.) - Use grep and regular expressions to analyze text - Access remote systems using SSH - Log in and switch users in multiuser targets - Archive, compress, unpack, and uncompress files using tar, star, gzip, and bzip2 - Create and edit text files - Create, delete, copy, and move files and directories - Create hard and soft links - List, set, and change standard ugo/rwx permissions - Locate, read, and use system documentation including man, info, and files in /usr/share/doc
Create simple shell scripts	- Conditionally execute code (use of: if, test, [], etc.) - Use Looping constructs (for, etc.) to process file, command line input - Process script inputs ($1, $2, etc.) - Processing output of shell commands within a script - Processing shell command exit codes
Operate running systems	- Boot, reboot, and shut down a system normally - Boot systems into different targets manually - Interrupt the boot process in order to gain access to a system - Identify CPU/memory intensive processes and kill processes - Adjust process scheduling - Manage tuning profiles - Locate and interpret system log files and journals - Preserve system journals - Start, stop, and check the status of network services - Securely transfer files between systems

Configure local storage	- List, create, delete partitions on MBR and GPT disks - Create and remove physical volumes - Assign physical volumes to volume groups - Create and delete logical volumes - Configure systems to mount file systems at boot by universally unique ID (UUID) or label - Add new partitions and logical volumes, and swap to a system non-destructively
Create and configure file systems	- Create, mount, unmount, and use vfat, ext4, and xfs file systems - Mount and unmount network file systems using NFS - Extend existing logical volumes - Create and configure set-GID directories for collaboration - Configure disk compression - Manage layered storage - Diagnose and correct file permission problems
Deploy, configure, and maintain systems	- Schedule tasks using at and cron - Start and stop services and configure services to start automatically at boot - Configure systems to boot into a specific target automatically - Configure time service clients - Install and update software packages from Red Hat Network, a remote repository, or from the local file system - Work with package module streams - Modify the system bootloader
Manage basic networking	- Configure IPv4 and IPv6 addresses - Configure hostname resolution - Configure network services to start automatically at boot - Restrict network access using firewall-cmd/firewall
Manage users and groups	- Create, delete, and modify local user accounts - Change passwords and adjust password aging for local user accounts - Create, delete, and modify local groups and group memberships - Configure superuser access

Manage security	- Configure firewall settings using firewall-cmd/firewalld - Create and use file access control lists - Configure key-based authentication for SSH - Set enforcing and permissive modes for SELinux - List and identify SELinux file and process context - Restore default file contexts - Use boolean settings to modify system SELinux settings - Diagnose and address routine SELinux policy violations
Manage containers	- Find and retrieve container images from a remote registry - Inspect container images - Perform container management using commands such as podman and skopeo - Perform basic container management such as running, starting, stopping, and listing running containers - Run a service inside a container - Configure a container to start automatically as a systemd service - Attach persistent storage to a container
Cluster Management	- Job management - Queue maintenance - Slurm/PBS - Kubernetes Basics
Network and Hardware Administration:	
Network Fundamentals	- Introduction to the OSI Model - Introduction to IPv4 (Internet Protocol) - IPv4 Packet Header - Address Resolution Protocol (ARP) - Introduction to TCP and UDP - TCP Header - Introduction to ICMP - Introduction to DNS - User mode and Privileged mode
VLANs	- VLANs Basic - How to configure VLANs
Wireless	- Introduction to Wireless Networks - Introduction to Wireless LANs - Wireless LAN 802.11 Service Sets - Introduction to Wireless Security - Wireless Authentication Methods - Wireless Encryption and Integrity - Wi-Fi Protected Access (WPA) - WLC WPA2 PSK Authentication

IP Connectivity	- Introduction to Routers and Routing - Router Basic Configuration - Introduction to Wide Area Networks (WAN)
IPv4 Subnetting	- Introduction to Subnetting - Basics of Binary Numbers - Subnetting in Binary, Decimal (Fast Method) - Classless Inter-Domain Routing (CIDR) - Variable Length Subnet Mask (VLSM) - Route Summarization - Hexadecimal to Binary and Decimal Conversion - Create a Subnetting Cheat Sheet
IPv6	- Introduction to IPv6 - Shortening IPv6 Addresses - How to find IPv6 Prefix - IPv6 Address Types - IPv6 Address Assignment Example - IPv6 Summarization
Routing	- Default Gateway - Static Routing - IPv6 Static Route - IP Routing Explained - Router on a Stick - InterVLAN Routing
OSPF (OPEN SHORTEST PATH FIRST)	- Introduction to OSPF - OSPF Configuration - OSPF Packets and Neighbor Discovery - OSPF Reference Bandwidth - OSPF Router ID
DHCP (Dynamic Host Configuration Protocol)	- Introduction to DHCP - DHCP Server Configuration - DHCP Relay Agent - DHCP Client - DHCP Server IPv6 Configuration
SNMP	- Introduction to SNMP
NAT	- Introduction to NAT and PAT - NAT Static & Dynamic - Port Address Translation (PAT)
(QoS) Quality of Service	- Introduction to Quality of Service (QoS) - IP Precedence and DSCP Values - Classification
Automation and Programmability	- Device Programmability - REST API - Data Models and Structures - Introduction to Software-Defined Networking (SDN) - Spine and Leaf Architecture

Cloud Computing	- Virtual Machines and Containers - Introduction to Cloud Computing - Cloud Connectivity
Hardware and Assembling	- PC Components - Network Switch and Routers - Power supply - Rack maintenance

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