Syllabus for the post of ASSISTANT MANAGER (ICT) NETWORKING
WRITTEN TEST & SKILL TEST

Network Administration:

Network Fundamentals	- Introduction to the OSI and TCP/IP 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, DNS lookup - User mode and Privileged mode - Spanning tree protocols - Network Topology - Different Type of Network devices and its configurations - PoE, NTP - Public and Private IP Addresses - Multicast - NGFW and IPS - Network Collisions, Jitter, Latency, Delay etc. - Security Concepts(Threats, Vulnerabilities, exploits etc)
Passive Networking	- Lan cable color code - Crimping of Ethernet cables, I/Os - Testing and rectification of faulty cables. - Network RACK - Physical Interfaces and Cabling Types (Single Mode, Multimode Fiber) - Troubleshoot interface and cable issues
Switching	- MAC learning and Aging - Frame switching and Flooding - Layer 2 Discovery Protocol - L2 vs L3 Switching - Layer 2 and Layer 3 Ether Channel (LACP, PAGP) - VoIP
Advanced STP	- RSTP - MSTP - PVST, PVST+ - BPDU , Root Port, Root Bridge - Port States and Security
VLANs	- VLANs Basic - VTP - How to configure VLANs - L3 and L2 VLAN - Native VLAN - Trunk , 802.1Q

IPv4 Subnetting and Super netting	- Introduction to Subnetting and Supernetting - 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
IPv6	- Introduction to IPv6 - Shortening IPv6 Addresses - How to find IPv6 Prefix - IPv6 Address Types - IPv6 Address Assignment Example - IPv6 Summarization
DHCP (Dynamic Host Configuration Protocol)	- Introduction to DHCP - DHCP Server Configuration - DHCP Relay Agent - DHCP Client - DHCP Server IPv6 Configuration
IP Connectivity	- Introduction to Routers and Routing - Router Basic Configuration - Introduction to Wide Area Networks (WAN) - High Availability – VRRP, HSRP, GLBP
Routing	- Default Gateway - Static and Dynamic Routing - IPv6 Static Route - IP Routing Explained - Router on a Stick - Inter VLAN Routing - BGP - Routing table - Classful v/s Classless Routing - Advanced Routing Features- Route-Maps, Route-Filtering etc. - Routing Protocol-Prefix, Network Mask, Administrative Distance, Gateway, Next-Hop, Metric etc. - Routing loops
Security	- AAA Authentication Protocol - ACL - Port Security - Device Access - Layer 2 Security Features (DHCP Snooping, Dynamic ARP Inspection, Port Security etc)
Device Management	- Introduction to SNMP - Syslog configuration and management - Flows - System Dump - Configuration Backup - OS upgradation - Password Management

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 - Heat Map generation, RF survey. - Wireless Controller Management - Root Cause identification related to WiFi.
OSPF (OPEN SHORTEST PATH FIRST)	- Introduction to OSPF - OSPF Configuration - OSPF Packets and Neighbor Discovery - OSPF Reference Bandwidth - OSPF Router ID - Multi Area OSPF - Point to Point - Route Summarization
Automation and Programmability	- Device Programmability - REST API - Data Models and Structures - Introduction to Software-Defined Networking (SDN) - Spine and Leaf Architecture
NAT	- Introduction to NAT and PAT - NAT Static & Dynamic - Port Address Translation (PAT) - Pool
(QoS) Quality of Service	- Introduction to Quality of Service (QoS) - IP Precedence and DSCP Values - Classification
Advance Networking	- Network Automation - SDWAN - SDN - NSM/NMS - SNMP, Syslog and Network flow analysis. - Auditing of user authentication and access logs - Bandwidth uses analysis
Firewall	- Firewall Policy - Zones - NAT, PAT - IPS,IDS - Web Filtering - VPN - Captive Portal management

Other Service	- Management of IP PBX and Unified Communication Manger - CCTVs - Physical Access Control - BYOD - IoT, OT communication - Data Center Automation
Virtualization Platforms	- Virtual Machines and Containers - Cloud Computing - Cloud Connectivity - NAS , SAN

Other Responsibilities	
	- Preparation of Network related Polices for the institute - Providing user awareness, training etc. - IT ACT 2000 and its amendment - Cert-in regulation and guidelines

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