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THE GEEK INSTITUTE OF CYBER SECURITY

Regd. By: E-Max India
Centre Code: EMAX/EK80606
(Recognized By Govt. Of India)

(Building Futures Through Digital Knowledge and Innovation)

Networking (CCNA & Fundamentals) (1 Month)

Syllabus

01: Introduction to Networking

- ✓ What is a network?
- ✓ Types of networks: LAN, WAN, PAN, MAN
- ✓ Client-Server vs Peer-to-Peer networks
- ✓ Network Topologies
- ✓ Basic Networking Devices: Hub, Switch, Router, Bridge, Modem

02: OSI & TCP/IP Models

- ✓ OSI Model: 7 Layers explained
- ✓ TCP/IP Model comparison with OSI
- ✓ Encapsulation and Decapsulation
- ✓ Data flow across the network

03: IP Addressing and Subnetting

- ✓ IPv4 Addressing & Classes
- ✓ Private vs Public IPs
- ✓ Subnetting in detail
- ✓ VLSM (Variable Length Subnet Masking)
- ✓ IPv6 Addressing & Configuration
- ✓ Binary conversion and CIDR notation

04: Network Devices & Cabling

- ✓ Routers, Switches, Access Points
- ✓ NICs and MAC addresses
- ✓ UTP, STP, Fiber optic cables
- ✓ Straight-through vs Crossover cables
- ✓ Packet and Frame formats

05: Switching Technologies

- ✓ MAC address learning and frame forwarding
- ✓ VLANs: Creation, Trunking, and Management
- ✓ Inter-VLAN routing
- ✓ Spanning Tree Protocol (STP)
- ✓ EtherChannel configuration (LACP, PAgP)

06: Routing Fundamentals

- ✓ Static Routing vs Dynamic Routing
- ✓ Routing Table and Administrative Distance
- ✓ RIP v1 & v2
- ✓ OSPF (Single-area)
- ✓ EIGRP (Basic understanding)
- ✓ Route summarization and redistribution

07: Wireless Networking

- ✓ IEEE 802.11 Standards
- ✓ Wireless architecture (Ad-hoc, Infrastructure)
- ✓ SSID, BSSID, Channels, Frequency
- ✓ WLAN security: WPA, WPA2, WPA3
- ✓ Basic wireless configuration and troubleshooting

08: Network Services & Protocols

- ✓ DHCP: Address leasing & relay agents
- ✓ DNS: Resolution and configuration
- ✓ NAT & PAT (Overloading, Static, Dynamic)
- ✓ NTP, FTP, TFTP, Telnet, SSH, HTTP/S, SNMP
- ✓ ICMP and troubleshooting protocols (ping, traceroute)

09: Wide Area Networks (WAN)

- ✓ WAN topologies
- ✓ Leased lines and serial connections
- ✓ HDLC, PPP
- ✓ GRE Tunnels
- ✓ VPN concepts: Site-to-Site, Remote Access
- ✓ MPLS basics

10: Network Security Fundamentals

- ✓ Security threats and mitigation techniques
- ✓ ACLs (Standard, Extended)
- ✓ Port Security and MAC address filtering
- ✓ Switchport security
- ✓ Firewall basics and IDS/IPS overview
- ✓ AAA (Authentication, Authorization, Accounting)

11: Network Automation and Programmability

- ✓ CLI vs GUI vs APIs
- ✓ Introduction to Python for networking
- ✓ Cisco DNA Center, SDN, and Controllers
- ✓ Network configuration tools (Ansible, Netmiko, NAPALM)
- ✓ Benefits of automation in enterprise networks

12: Practical Labs & Cisco CLI Practice

- ✓ Hands-on labs using Cisco Packet Tracer, GNS3, or EVE-NG
- ✓ Router & switch configuration (real-world scenarios)
- ✓ Troubleshooting simulations
- ✓ Command-line practice for all modules

13: CCNA Exam Preparation

- ✓ Official exam topics breakdown
- ✓ Question formats and test-taking strategy
- ✓ Practice test questions and answers
- ✓ Certification exam registration guidance