NETWORKING

S.NO	PRIMARY TOPICS	SUB TOPICS	Duration (in min)	POINTS TO BE COVERED	LAB EXERCISES
1	Fundamentals Review	OSI Layers	120	1.OSI 7 Layers and its Funtionalities 2.OSI Layers and TCP Suite	
2	Network Addressing Scheme	Binary, Decimal, Hexadecimal Conversion IPv4 Supernetting & Subnetting	240	1.Binary, Decimal, Hexadecimal Conversion 2.IPv4 Supernetting & Subnetting(FLSM & VLSM) 3.Assigning IP Address for a Small Network	Exercise for decimal to binary conversion, binary to decimal conversion and hexadecimal
3	Switching	Basics of Switching	120	1. Switching concept and operation of switch 2. MAC/CAM Table	
4		Starting with Switch	60	1. Internal components of switch 2. Booting process 3. Types of Switches	Demo of internal components of switch
5		Basic Configuration(CLI)	60	1. Introduction to CLI 2. Types of modes(exec/configuration) 3. Login Banner 4. Configuring Interface Description 4. Configuring Password(Enable Password & Secret) 5. Configuring Telnet Access and Password 6. Configuring Console Access and Password	
6		DTP	60	Port modes -Access -Trunk -Dynamic Desirable -Dynamic Auto	
7		VLAN	90	1. Necessity of Virtual LAN 2. Types of VLAN 3. VLAN ID 4. VLAN Membership, ISL & 802.1q 5. Inter VLAN Routing -Router on a Stick -Switched Virtual Interface	Build a topology and create Multiple VLANs Append the topology with a router and L3 switch to demonstrate Intervlan Routing
8		VTP	30	1. Necessity of VTP 2. VTP Modes & its functionalities -Server -Client -Transperent 3. Significance of configuration revision number	Build a topology that demonstrates VTP
9		STP	60	1. 802.1d(Spanning Tree Protocol) 2. Complete process of Identifying port states 3. RSTP, PVSTP, MST, PVSTP+(only theory) 4. Port fast(only Theory) 4.Troubleshooting STP related Issues	Build a Redundant Switched topology and demonstrate the STP Process
10		Securing a switch	30	1. Configuring Port Security	
11		Backup and restore(Switch)	60	1. Backup & restore of running-config, startup-config 2. Backup & Upgrade of IOS 3. Recover a switch with No IOS(x/y modem) 3. Restoring password	
12	Router	Starting with Router	180	1. The Internal Components of a Cisco Router 2. The Router Boot Sequence 3. Managing Configuration Register 4.Types of Router interfaces 5.Using CDP Neighbours 6.Usage of Telnet	Demo of cisco router.
13		Basic Configuration(CLI)	120	1. Basic configuration 2. Router CLI modes 3. Configure Password(Secret,Telnet, Console) 4. Configure hostname & login banner 5. Encrypt password	
14	IP Routing	Basics of Routing and its Types -Static Routing -Dynamic Routing -DVR -LSR -ADVR (or) Hybrid	60	1. Routing Table 2. Gateway 3. Path Determination	Configure IP address, Serial interface, clock rate, check routing table, explain the need to routing protocol
15		Routing Terminologies	120	1. Administrative Distance 2. Metric 3. Hop 4. Bandwidth & Delay 5. Load & Relaiability	
16		Static Routing Protocol & Default Routing	120	1.Configuring Static Routing Protocol 2.AD of Static Routing Protocol 3.Difference between Configuring Static route with Exit interface and Next hop IP Address 4.Configure Default routing 5. Significance of Stub Network with Default Routing	Configure Static and Default Routing and demonstrate the reachability
17		Dynamic Routing Protocol - RIP (DVR)	180	1. Confiuring RIP Routing protocol and Advertising networks 2. AD, Metric of RIP, Timers 3. Loop avoidance mechanism in RIP -Split Horizon -Poison Reverse 4. Summarization of Routes 5.Authentication for Routing updates 6.Troubleshooting RIP Related Issues	Configure RIPv1 & v2, configure manual summarization, verifiaction commands.
18		Dynamic Routing Protocol - EIGRP (ADVR or Hybrid)	240	1. Configuring EIGRP Routing protocol and Advertising networks 2. EIGRP metrics, path selection, AD , Autonomous System 3. DUAL Algorithm 4. Autosummarization 5. Equal & unequal cost load balancing 6. Authentication 7.Troubleshooting EIGRP Related Issues	Configure EIGRP, load balancing and authentication
19		Dynamic Routing Protocol-OSPF (LSR)	180	1. Configuring OSPF Routing protocol and Advertising networks 2. Process ID , Areas in OSPF 3. Path selection in OSPF 4. LSA types(Basic Information) 5. OSPF Authentication 6. Summarization 7. DR & BDR election 8.Troubleshooting OSPF Related Issues	Configuring OSPF, Troubleshooting OSPF, Authentication(plain-text and MD5), DR and BDR election, Troubleshooting OSPF Neighbor Adjacencies, Troubleshooting Authentication
20		Implementing Redistribution	120	Redistribution with OSPF & RIP, EIGRP & OSPF, RIP & EIGRP	Configure redistribution with OSPF & RIP, EIGRP & OSPF

NETWORKING

S.NO	PRIMARY TOPICS	SUB TOPICS	Duration (in min)	POINTS TO BE COVERED	LAB EXERCISES
21	Security	Access Control Lists	240	1. Standard ACL 2. Extended ACL 3. Named ACL	Configure standard ACL for block/permit ping and telnet, Configure Extended ACL for block/ping icmp, http, telnet and configure named ACL
22		1. Address Space Management 2. Transitioning to IPv6	240	1. Working of Static NAT,Dynamic NAT and PAT 2. Advantages and Disadvantages of Static NAT/Dynamic NAT/PAT 3. How to configure Static NAT/Dynamic NAT/PAT?	Configure Static NAT, Dynamic NAT and Overloading NAT, Verify configuration, Configure DHCP Server Function in cisco router
23	IPv6	Introduction to IPv6	60	1. Introduction to IPv6 2. Types of Addresses in IPv6(Only Theory)	Configure IPv6
24	WAN	Terminologies related to WAN Technologies	30	1. DTE & DCE 2. Significance of Clock Rate 3. Synchoronous and Asynchronous communication 4. Types of Networks - Point to Point - Multi Access - Broadcast Multi Access - Non Broadcast Multi Access	
25		Understanding WAN Technologies	180	1. HDLC -Configure HDLC on cisco router -Significance of HDLC and Cisco HDLC 2. PPP -Configure PPP on cisco router -Configure Authentication on PPP Link -PAP -CHAP 3. Frame Relay - IETF, DLCI, LMI, Inverse ARP,Virtual Circuit 4. Intro to MPLS	Configure PPP, CHAP, PAP and HDLC, Frame relay Verify encapsulation
26	Crash-recovery(Router)	Backup and restore	120	1. Configure TFTP Server 2. Backup and Restore Configuration files 3. Backup and Upgrade IOS for a Router 4. Recover a Router from a IOS Crash(TFTP) 5. Restore a enable password	TFTP, Backup & restore of running-config, backup & restore of startup config, backup & restore of startup config, backup & restore of IOS
		Total Duration (mins)	**3120**		
		Total Duration (hrs)	**52**		
		Total Duration (days)	**9.45**		