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Essential Two - Network Module – Table of Contents

S.NO	PRIMARY TOPICS	SUB TOPICS	POINTS TO BE COVERED
1	**Fundamentals Review**	OSI Layers	1.OSI 7 Layers and its Functionalities 2.OSI Layers and TCP Suite
2	**Network Addressing Scheme**	Binary, Decimal, Hexadecimal Conversion IPv4 Supernetting & Subnetting	1.Binary, Decimal, Hexadecimal Conversion 2.IPv4 Supernetting & Subnetting(FLSM & VLSM) 3.Assigning IP Address for a Small Network
3	**Switching**	Basics of Switching	1. Switching concept and operation of switch 2. MAC/CAM Table
4		Starting with Switch	1. Internal components of switch 2. Booting process 3. Types of Switches

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8		VTP	1. Necessity of VTP 2. VTP Modes & its functionalities -Server -Client -Transparent 3. Significance of configuration revision number
9		STP	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
10		Securing a switch	1. Configuring Port Security
11		Backup and restore(Switch)	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

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12	**Router**	Starting with Router	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 Neighbors 6.Usage of Telnet
13		Basic Configuration(CLI)	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	1. Routing Table 2. Gateway 3. Path Determination

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15		Routing Terminologies	1. Administrative Distance 2. Metric 3. Hop 4. Bandwidth & Delay 5. Load & Reliability
16		Static Routing Protocol & Default Routing	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
17		Dynamic Routing Protocol - RIP (DVR)	1. Configuring 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

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18		Dynamic Routing Protocol - EIGRP (ADVR or Hybrid)	1. Configuring EIGRP Routing protocol and Advertising networks 2. EIGRP metrics, path selection, AD , Autonomous System 3. DUAL Algorithm 4. Auto summarization 5. Equal & unequal cost load balancing 6. Authentication 7.Troubleshooting EIGRP Related Issues
19		Dynamic Routing Protocol-OSPF (LSR)	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
20		Implementing Redistribution	Redistribution with OSPF & RIP, EIGRP & OSPF, RIP & EIGRP

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21	**Security**	Access Control Lists	1. Standard ACL 2. Extended ACL 3. Named ACL
22		1. Address Space Management **2. Transitioning to IPv6**	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?
23	**IPv6**	Introduction to IPv6	1. Introduction to IPv6 2. Types of Addresses in IPv6**(Only Theory)**
24	**WAN**	Terminologies related to WAN Technologies	1. DTE & DCE 2. Significance of Clock Rate 3. Synchronous and Asynchronous communication 4. Types of Networks - Point to Point - Multi Access - Broadcast Multi Access - Non Broadcast Multi Access

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25		Understanding WAN Technologies	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
26	**Crash-recovery(Router)**	Backup and restore	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