Sansbound / Koti Concepts
CCNA Syllabus

Chapter No 1

Objectives:

1. Enabling a small network. Working with Cisco Packet Tracer
2. Introduction to the the terms like
    1. NIC Card,
    2. HW address
    3. Ethernet Switch
    4. Ethernet Cables
    5. IP address
    6. Ping Command
    7. Packet
    8. Protocols
    9. Introduction to Protocol Analysis with Packet Capture

Chapter No 2

Objectives:

1. Numerical systems, Binary, Decimal and Hex Decimal
2. Conversions from one numerical system to another
3. Understand the IPv4 addressing Scheme of TCP/IP
    - Dotted Decimal System
    - Class A, B, C, D
    - Identification
    - No of Class A, B and C
    - No of hosts in each of the Class A, B and C
    - Directed Broadcast, Flooded broadcast
    - Subnetmask
    - Practice on identifying the Class, Subnetmask, First HID, Last HID and Directed broadcast IP given the Network ID

Chapter No 3

Objectives :

Understand the logic behind Routing
Routing table, Components of a route
Default-Gateway and Default-Route
IP Routing functionality of a router
Static Routing

Chapter No 4

Objectives:

Troubleshooting routing problems with ‘Ping’ command
Understand the following ICMP error messages
- Request timed out
- Destination host unreachable
- Reply from so and so : Destination host unreachable
- TTL expired in transit

Tracert Command
Routing loops

Chapter No 5

Objectives:

Understand the configuration of a Cisco router
User, Privileged, Global and specific Configuration modes

Static Routing on Cisco routers

Chapter No 6

Objectives:

Introduction to Routing Protocols
Basic configuration of RIP
Basic configuration of EIGRP
Basic configuration of OSPF
Basic configuration of BGP

Chapter No 7

Objectives:

Understanding the 3 types of Packets generated on the network.
Unicast, Multicast and Broadcast packets

Point to Point, Broadcast and Non-Broadcast Data link layer protocols
Ethernet, HDLC, PPP and Frame relay
Ethernet behaviour on Unicast, Multicast and Broadcast Packets

ARP protocol, ARP Request and ARP Response

Understand the negative effects of broadcast packets and need for creating smaller broadcast domains.

Chapter No 8

Objectives:

Improvement of network performance by Subnetting or dividing the network into smaller broadcast domains by a router
Subnetting Practice

Chapter No 9

Objectives:

Improvement of Network performance by Switches as far as Unicast packets are concerned.
Need for replacing the Hubs with Switches.

Address Learning, filtering and forwarding functionality of a Switch.

Improvement of Network performance by Switches as far as Broadcast packets are concerned.

Configuration of logical broadcast domains on the switches.

Understanding the configuration of Access links and Trunk links on a switch.

Configuration of Inter-Vlan routing on a router and a Layer 3 switch

Chapter No 10

Objectives:

Understanding the 7 different conditions to be fulfilled before 2 systems could talk to each other.

OSI layers

Physical, Datalink, Network, Transport, Session, Presentation and Application
TCP and UDP, TCP Flags
TCP Connection establishment
TCP connection termination

Capture and analysis of the Following Packets

ARP request, Arp response, Address resolution and Duplicate Address detection

ICMP echo request, echo reply, Destination host is unreachable, TTL expired in transit

NetBIOS Name registration, Directed broadcast packets, UDP
DNS Name query request and Name response
DHCP packets, DHCP Relay agent

FTP, TCP connection establishment, connection termination, FTP control and Data session
TCP flags

Capture an analysis of the packets being forwarded by routers

Chapter No 11

Objectives:

Understanding the Identification of the network traffic by Access Control lists
Standard Access Control Lists
Extended Access Control lists

Packet filtering by a router

Chapter No 12

Objectives:

Understand the need for Private IP addresses. Address exhaustion problem

Configuration of Network Address Translation

- Dynamic NAT with source IP getting translated to an interface IP,
- Dynamic NAT with source IP getting translated to a pool of IP addresses
- Static NAT

Chapter No 13

Objectives:

Understand the configuration of Virtual Private Network with GRE tunnels

Configuration of Point-to-Point GRE tunnels

Chapter No 14

Objectives:

Configuration of Gateway redundancy with HSRP
Static floating routes and floating IP

Chapter No 15

Objectives:

Understanding the difference between Distance vector and Link state routing protocols

Understanding the concept of ‘Metric’ and ‘Administrative Distance’

Understanding OSPF behaviour on a Point-Point Network

Understanding OSPF behaviour on a Broadcast Multi access network. Designated router and Backup designated router.

Chapter No 16

Objectives:

Understand the importance of Spanning Tree protocol (STP). Understand the port states and port roles.
Configuration of Ether channels using PAgP and LACP
Vlan Trunking Protocol
Dynamic Trunking Protocol

Chapter No 17

Objectives:

Understand the addressing scheme of IPv6
Configuration of static routing with IPv6

Chapter No 18

Objectives:

Understand Wireless Technology
Configuration of a wireless network

Chapter No 19

Miscellaneous topics

Chapter No 20

Objectives:

Understand the importance of Network Automation