M.Sc. (SAN) Second Year (Two Semesters)

Semester-III					
Course Code	**Title of the paper**	**External Credits**	**Internal Credits**	**Total Credits**	**Total No. of Classes**
M.Sc. SAN-301	Exchange Server Part I	3	1	4	40hrs
M.Sc. SAN-302	Network Administration Part II	3	1	4	40hrs
M.Sc. SAN-303	Windows 2012 ADC Part-II	3	1	4	40hrs
M.Sc. SAN-304	Linux Administration - Part II	3	1	4	40hrs
M.Sc. SAN-305	**Elective – III** 1] Cloud Computing 2] NOSA 3] Advanced Operating System	3	1	4	40hrs
M.Sc. SAN-306	Lab-1 (Network Admin Part II + Linux Administration - Part II)	1	1	2	40hrs
M.Sc. SAN-307	Lab-2 (Windows 2012 ADC Part-II + Exchange Server Part I)	1	1	2	40hrs
M.Sc. SAN-308	Seminar	0	1	1	
Total Credits		17	8	25	

Semester-IV					
Course Code	**Title of the paper**	**External Credits**	**Internal Credits**	**Total Credits**	**Total No. of Classes**
M.Sc. SAN-401	Exchange Server Part II	3	1	4	40hrs
M.Sc. SAN-402	Windows 7 Configuration	3	1	4	40hrs
M.Sc. SAN-403	Network Security	3	1	4	40hrs
M.Sc. SAN-404	Windows 2008 Network Infrastructure	3	1	4	40hrs
M.Sc. SAN-405	**Elective – III** 1] CCENT 2] VMWARE 3] CCNA Security	3	1	4	40hrs
M.Sc. SAN-406	Lab-1 (Windows 7 + Windows 2008 Network Infrastructure)	1	1	2	40hrs
M.Sc. SAN-407	Lab-2 (Windows 2012 ADC Part-II + Exchange Server Part I)	1	1	2	40hrs
M.Sc. SAN-408	Open Elective	0	1	1	
Total Credits		17	8	25	

SAN – 301 Exchange Server 2010 (Part-I) (4 – Credits)

UNIT I:Installing Exchange Server 2010

Configure the Environment for Exchange Server 2010,Preparing a New Environment for Exchange 2010 ,Preparing for Coexistence and Migration, Configure the Server to Host, Exchange Server 2010, Hardware and Software Requirements, Preparing a Host for the Installation of Exchange Server2010, Configuring Server Roles and Features for Exchange, Deploy Exchange Server 2010 Roles,Installing Exchange Server 2010

UNIT II: Exchange Databases and Address Lists

Deploying Exchange Databases, Configuring Exchange Databases, Managing Mailbox Databases, Managing Public Folder Databases, Address List Configuration, Creating and Configuring an Address List, Working with Offline Address Books.

UNIT III: Exchange Mailboxes

Mailbox Configuration, Creating Mailboxes, Linked Mailboxes, Configuring Mailbox Properties, Moving Mailboxes, Disabling, Removing, and Reconnecting ,Mailboxes, Import and Export Mailboxes, Archive Mailboxes, Resources and Shared Mailboxes, Creating and Configuring Resource Mailboxes, Shared Mailboxes, Converting Mailboxes

UNIT IV: Distribution Groups and Public Folders

Managing Recipients and Distribution Groups, Mail Contacts, Mail-Enabled Users, Distribution Groups, Setting Up Public Folders, Creating Public Folders Configuring Public Folder Permissions, Mail-Enable Public Folder, Configuring Public Folder Limits

UNIT V: Configuring Client Access

IMAP, POP, and Microsoft ActiveSync , Client Access Server Certificates, Assigning an External Name, Configure POP and IMAP, Auto discover, ActiveSync, Outlook Anywhere and RPC Clients, Outlook Anywhere, Configure RPC Client Access, Configure Client Access Array, Client Throttling Policies, OWA, Configure File Access and Web Ready Document Viewing, Segmentation Settings, OWA Virtual Directory Properties, Exchange Control Panel

UNIT VI: Federated Sharing and Role Based Access Control

Role Based Access Control, Implementing RBAC, Using Management Role Groups , Configuring Federated Sharing, Implementing Federated Sharing, ,Assigning the Federated Sharing Role.

Reference books:

1. MCTS Self-Paced Training Kit (Exam 70-662): Configuring Microsoft Exchange Server 2010 Pro Certification (Microsoft Publication) **ISBN**-10: 0735627169 Edition: 1st

SAN – 302 Network Administration (Part-II) (4 – Credits)

UNIT I:Virtual LANs

Virtual LAN Concepts, Trunking with ISL and 802.1Q, IP Subnets and VLANs, VLANTrunking Protocol (VTP), VLAN and VLAN Trucking Configuration and Verification, VTP Configuration and Verification.

UNIT II:IP Routing: Static and Connected Routes

IP Routing, IP Addressing and Sub netting, IP Forwarding by matching the most specific Route, DNS, DHCP, ARP, and ICMP, Fragmentation and MTU, Secondary IP Addressing ISL and 802 1 Q configuration on Routers, Configuring Static Routes, The extended ping Command, Static Default Routes, Default Routes Using the IP route Command,Default Routes Using the IP default - network command.

UNIT III:TROUBLESHOOTING IP ROUTING

The Ping and trace route Commands, Internet Control Message Protocol, Troubleshooting the Packet Forwarding Process, Host Troubleshooting Tips, Interface Status, Access List Troubleshooting Tips

UNIT IV:ROUTING PROTOCOL

Dynamic Routing Protocol Overview, Routing protocol Functions, Interior and Exterior Routing Protocols, Comparing IGPs, Distance Vector Routing Protocol Features, Link-State Routing Protocol Features

UNIT V:OSPF

OSPF Protocols and Operation, OSPF Neighbors, OSPF Topology Database Exchange, Building the IP Routing Table, OSPF Configuration

UNIT VI:EIGRP & POINT-TO-POINT WANs

EIGRP Concepts and Operation, EIGRP Neighbors, Exchanging EIGRP Topology Information, EIGRP Convergence, EIGRP Configuring and Verification, PPP Concepts, The PPP Protocol Field , PPP Link Control Protocol, PPP Configuration

Reference Book

1) CCNA ICND2 (Third Edition) By Wendell Odom.Third Edition (**ISBN**: 978-1-58720-435-7)

SAN – 303 WINDOWS SERVER 2012 ACTIVE DIRECTORY CONFIGURATION (Part-II) (4 – Credits)

UNIT I: Monitoring Servers

Introducing the Microsoft Management Console (MMC), Using Event Viewer ,Using Reliability Monitor, Managing Performance, Monitoring the Network

UNIT II: Configuring File Services and Disk Encryption

Securing Files, Encrypting Files with EFS, Managing EFS Certificates Encrypting Files with BitLocker, Managing BitLocker Certificates Configuring the Network Unlock Feature

UNIT III: Configuring DNS Zones

Understanding DNS, Configuring and Managing DNS ZonesUsing the DNSCMD Command to Manage Zones, Configuring DNS Record TypesUsing the DNSCMD Command to Manage Resource Records ,Troubleshooting DNS Problems

UNIT IV: Configuring a Network Policy Server

Configuring a Network Policy Server Infrastructure, Installing and Configuring NetworkPolicy Server, Managing NPS Policies, Configuring Connection Request Policies Configuring Network Policies, Managing NPS Templates

UNIT V:Configuring Server Authentication

Configuring Server Authentication ,Managing Service Accounts, Understanding Domain Controllers, Installing and Configuring an RODC ,Cloning a Domain Controller

UNIT VI:Maintaining Active Directory

Automating User Account Management, Backing Up and Restoring Active Directory Optimizing an Active Directory Database, Cleaning Up Metadata

Reference Book.

1. Exam Ref 70-411). Administering Windows Server 2012.- By Patrick Regan (Microsoft Official academic course) **ISBN**-13: 978-1118882832 **ISBN-10**: 1118882830 Edition: 1st

SAN– 304: Linux Administration (Part II) (4 – Credits)

UNIT I:Internet connectivity

Common configuring information, Laying the foundation: the local host Interface Configuring dialup internet Access, Configuring Digital Subscriber Line Access Troubleshooting Connection Problems, Configuring a Dial –in PPP server

UNIT II:Administering Database Services

A brief Review of Database Basics, Installing & Configuring MySQL, Database Clients

UNIT III:Secure File Transfer Protocol

FTP Client, FTP Server, Installing FTP Software, FTP User , Configuring the Very Secure FTP Server, Configuring The WU-FTPd Server, Using Commands in the ftp hosts File to Allow or Deny FTP Server Connection, Server Administration

UNIT IV:Handling Electronic Mail

How Email is Send & Received, The Mail Transport Agent, Choosing a Mail Client Attachment – Sending Binary Files as Text, Basic Sendmail Configuration & Operation, Using Fetchmail to Retrieve Mail,Choosing a Mail Delivery Agent,Mail Daemons

UNIT V:Kernel & Module Management

The Linux kernel, Managing Modules, When to Recompile modules, Kernel VersionsObtaining the Kernel Sources,Patching the kernel, Compiling the kernel

UNIT VI:Multimedia Applications

Burning CDs & DVDs in Fedora core Linux, Sound & Music, Viewing TV &Video Using Cameras with Fedora core Linux,Using Scanners in fedora Core Linux

Reference Books

1. Red Hat Linux & Fedora Unleashed, Second Edition, By Bill Ball & Hoyt Duff **ISBN-**10: 0672326299; **ISBN-13:** 978-0672326295;

SAN – 305 Elective- III (1) Cloud Computing (4 – Credits)

UNIT I: Enterprise computing: a retrospective

Introduction, Mainframe architecture, Client-server architecture,3-tier architectures with TP monitors

UNIT II: The internet as a platform and cloud computing

Internet technology and web-enabled applications, Web application servers,Internet of services,Emergence of software as a service, Successful SaaS architectures, Dev 2.0 platforms, Cloud computing, Dev 2.0 in the cloud for enterprises

UNIT III: Cloud computing platforms

Infrastructure as a service: Amazon EC2, Platform as a service: Google App Engine Microsoft Azure

UNIT IV: Web services, AJAX and mashups

Web services: SOAP and REST, SOAP versus REST AJAX: asynchronous 'rich' interfaces, Mashups: user interface services

UNIT V: Data in the cloud

Relational databases, Cloud file systems: GFS and HDFS, BigTable, HBase and Dynamo, Cloud data stores: Datastore and SimpleDB

UNIT VI: MapReduce and extensions and Dev 2.0 platforms

Parallel computing,TheMapReduce model Parallel efficiency of MapReduce,Relational operations using MapReduce Enterprise batch processing using MapReduce, Salesforce.com's Force.com platform TCS InstantApps on Amazon cloud.

Reference Book:

1] **Enterprise Cloud Computing: Technology, Architecture, Application ByGautamShroff**
ISBN: 9780521137355 Edition: 1s

SAN – 305 Elective- III (2) Network Operating System Administrations

(4 – Credits)

UNIT I: Introduction

Network Standards & documentation, Packets & Encapsulation, CIDR, Private address &NATRouting, Routing tables, ICMP Redirector, PPP Protocol, Packet forwarding.

UNIT II: Routing Protocols

Routing daemons & routing protocols, Distance vector protocol, Link State protocol, Network design Issues , Network architecture Vs Building Architecture.

UNIT III: Protocols

Existing protocols, Expansion, Congestion, Maintenance & documentation, The Network File System, General information about NFS, Web NFS, File Locking, Disk quotes, Dump NFS Station

UNIT IV: Network management & debugging

Troubleshooting, Network Management Protocol, RMON: Remote Monitor MIB, Network Management Application

UNIT V: Web Hosting

Web hosting, Web hosting basics, HTTP server installation, Virtual Interfaces.

UNIT VI: Internet Servers

Internet Servers, Caching Proxy Servers

Reference Book :-

1] UNIX System Administration Hand book III rdBy. EviNeimeth, Garth Snyder, Scott Seebags, Trent R Hein, ISBN-13: 007-6092029496 ISBN-10: 0130206016 Edition: 3rd

SAN – 305 Elective- III (3) Advanced Operating System (4 Credits)

UNIT I Introduction to UNIX/Linux Kernel

System Structure, User Perspective, Assumptions about Hardware, Architecture of UNIX Operating System (TextBook-3: Chapter Topics: 1.2, 1.3, 1.5, 2.1), Concepts of Linux Programming-Files and the File system, Processes, Users and Groups, Permissions, Signals, Inter-process Communication (TextBook-1: Chapter 1- relevant topics)

UNIT II File and Directory I/O

Buffer headers, structure of the buffer pool, scenarios for retrieval of a buffer, reading and writing disk blocks, inodes, structure of regular file, open, read, write, lseek, close, pipes, dup (TextBook- 3: Chapter Topics: 3.1-3.4, 4.1, 4.2, 5.1-5.3, 5.5-5.7, 5.12, 5.13) open, creat, file sharing, atomic operations, dup2,sync, fsync, and fdatasync, fcntl, /dev/fd, stat,fstat, lstat, file types, Set-User-ID and Set-Group-ID, file access permissions, ownership of new files and directories, access function, umask function, chmod and fchmod, sticky bit, chown, fchown, and lchown, file size, file truncation, file systems, link, unlink, remove, and rename functions, symbolic links, symlink and readlink functions, file times, utime, mkdir and rmdir, reading directories, chdir, fchdir, and getcwd, device special files (TextBook-4: Chapter Topics: 3.3, 3.4, 3.10 3.14, 3.16, 4.2-4.23)

UNIT III: Process Environment, Process Control and Process Relationships

Process states and transitions, layout of system memory, the context of a process, saving the context of a process, sleep, process creation, signals, process termination, awaiting process termination, invoking other programs, the user id of a process, changing the size of the process, The Shell, Process Scheduling (TextBook-3: Chapter Topics: 6.1-6.4, 6.6, 7.1-7.8, 8.1)

UNIT IV: Memory Management

The Process Address Space, Allocating Dynamic Memory, Managing Data Segment, Anonymous Memory Mappings, Advanced Memory Allocation, Debugging Memory Allocations, Stack-Based Allocations, Choosing a Memory Allocation Mechanism, Manipulating Memory, Locking Memory, Opportunistic Allocation (TextBook-1: Chapter 8) Swapping, Demand Paging (TextBook-3: Chapter Topics: 9.1, 9.2)

UNIT V. Signal Handling

Signal concepts, signal function, unreliable signals, interrupted system calls, reentrant functions, SIGCLD semantics, reliable-signal technology, kill and raise, alarm and pause, signal sets, sigprocmask, sigpending, sigsetjmp and siglongjmp, sigsuspend, abort, system function revisited, sleep (TextBook-4: Topics: 10.2-10.13, 10.15-10.19)

Unit VI: Windows Thread Management

Thread Internals Data Structures, Kernel Variables, Performance Counters, Relevant Functions, Birth of a Thread Examining Thread Activity: Limitations on Protected Process Threads, Worker Factories (Thread Pools) Thread Scheduling Overview of Windows Scheduling, Priority Levels, (TextBook-2: Chapter 5 [relevant topics])

References:

1. Linux System Programming, O'Reilly, by Robert Love.
2. Windows Internals, Microsoft Press, by Mark E. Russinovich and David A. Soloman.
3. The Design of the UNIX Operating System, PHI, byMaurice J. Bach.
4. Advanced Programming in the UNIX Environment, Addison-Wesley, by Richard Steve

SAN – 401 Exchange Server 2010 (Part-II) (4 – Credits)

UNIT I: Configuring Transport Servers.

Hub Transport Servers, Accepted Domains, Remote Domains, Email Address Policies, Transport Settings and Transport, Dumpster, Edge Transport Servers, Edge Transport Role, EdgeSync, Clone Edge Transport Server, Address Rewriting.

UNIT II : Monitoring Exchange Server 2010.

Monitoring Exchange Database Information and Statistics, Monitoring DAGs, Monitoring Mail Flow, Configuring Message Tracking , Monitoring Transport Queues, Suspending, Resuming, and Retrying Queues, Managing Messages, Monitoring Exchange Connectivity, Debugging Network Connectivity

UNIT III: Logging and Reports.

Generating Reports, Generating Mailbox Statistics Reports, Reporting Mailbox Folder Statistics, Testing Mail Flow, Reporting Logon Statistics, Creating Reports on Number of Users, of a Particular Protocol, Using Exchange Server Performance Monitor, Using the Microsoft Exchange Best Practices, Analyzer (ExBPA) to Create Reports, Obtaining Exchange ActiveSync Reports, Managing Logging, Managing Connectivity Logging, Managing Protocol Logging, Managing Agent Logging, Managing Exchange Store Logging, Managing Administrator Audit Logging, Managing Routing Table Logging, Specifying Diagnostic Logging Levels, Managing Message Tracking.

UNIT IV: Managing Records and Compliance.

Managing Records, Using MRM, Configuring Retention Tags, Retention Policies, Administrating Managed Folders, Implementing Compliance, Configuring IRM, Configuring Journaling, Using MailTips, Implementing a Discovery Search, Placing a Mailbox on Legal Hold, Creating and Configuring Ethical Walls

UNIT V: Message Integrity, Antivirus and Anti-Spam.

Ensuring Message Integrity, Using S/MIME Extensions, Using TLS and MTLS, Implementing Domain Security, Configuring Permissions on Active Directory Objects, Rights Management Services Federation Creating Transport Rules, Managing Anti-Spam and Antivirus, Countermeasures, Configuring Anti-Spam Features, Configuring Antivirus Features, Implementing File-Level Antivirus Scanning,Exchange High-Availability Solutions, Managing Database Availability Groups, DAGs, Create DAGs, Add and Remove Servers from DAGs, Mailbox Database Copies, Highly Available Public Folders, Public Folder Replicas, Replication Schedules, Public Folder Backup and Restore, High Availability for Other Exchange Roles, Configuring Network Load Balancing, Client Access Arrays, Transport Server High Availability

UNIT VI : Exchange Disaster Recovery.

Backup and Recover Exchange Data, Using Windows Server Backup, Creating an Exchange Server Disaster Recovery Plan, Database Portability, Recovering a Mailbox within the Deleted, Mailbox Retention Period, Recovering Single Items, Using Exchange Native Data Protection, Recovering Exchange Roles, Creating a Disaster Recovery Plan Based on Exchange Roles, Recovering a Hub Transport Server, Recovering a Client Access Server, Recovering a Mailbox Server, Recovering a Member Server in a DAG, Recovering a Unified Messaging Server, Recovering an Edge Transport Server

Reference books:

1. MCTS Self-Paced Training Kit (Exam 70-662): Configuring Microsoft Exchange Server 2010 Pro Certification (Microsoft Publication) **ISBN**-10: 0735627169 Edition: 1st

SAN – 402 Windows 7 Configuration (4-Credits)

UNIT I: Install, Migrate, or Upgrade to Windows.

Installing Windows 7, Upgrading to Windows 7, Managing User Profiles

UNIT II: Configuring and Deploying System Images.

Capturing System Images, Managing Virtual Hard Disk Files, Managing a System Image Before Deployment, Deploying Images.

UNIT III: Managing Devices, Disks, Applications, and Network Settings.

Managing Device Drivers and Devices, Managing Disks, Application Compatibility, Managing AppLocker and Software, Configuring IPv4, Configuring IPv6, Network Configuration.

UNIT IV: Windows Firewall, Remote Management, BranchCache, Resource Sharing And Authentication and Account Control

Managing Windows Firewall, Windows 7 Remote Management, Sharing Resources, Folder and File Access, Managing BranchCache, Managing User Account Control, Windows 7 Authentication and Authorization.

UNIT V: DirectAccess VPN Connections, BitLocker and Mobility Options, Windows Update and Windows Internet Explorer.

Managing DirectAccess, Remote Connections, Managing BitLocker, Windows 7 Mobility, Updating Windows 7, Configuring Internet Explorer.

UNIT VI : , Monitoring and Performance, Recovery and Backup,

Monitoring Systems, Configuring Performance Settings. Backup, System Recover, Recovering Files and Folders.

Reference books:

MCTS 70-680 Configuring-Windows-7 Training Kit – Microsoft PublicationISBN-13: 978-0735627086

SAN – 403 Network Security (4-Credits)

UNIT 1 : Attacks on Computers and Computer Security

Introduction, The Need for Security, Principles of Security, Types of Attacks, OSI Security Architecture, A Model for network security.

UNIT 2 :Cryptography: Concepts and Techniques

Plain text and Cipher Text, Substitution Techniques, Transportation Techniques, .Encryption and Decryption, Symmetric and Asymmetric Key Cryptography, Steganography

UNIT 3 : Domain Name Disputes and Trademark Law

Concept of Domain Names, New Concepts in Trademark Jurisprudence, Cyber squatting, Reverse, ijacking, Meta tags, Framing, Spamming, Jurisdiction in Trademark Dispute

UNIT 4 : The Cyber Crimes

Tampering with Computer Source Documents, Hacking with Computer System, Publishing of Information, Which is Obscene in Electronic Form, Offences : Breach of Confidentiality & Privacy, Offences : Related to Digital Signature Certificate

UNIT 5 : Introduction Of Ethical Hacking

Information gathering, Foot printing - Active / Passive, Scanning ,Sniffers, Hacking by stealth, Virus, Trojans, Binders , Key loggers

UNIT 6 : Study Of Firewall And Network Security Configuration

Introduction of Firewall, Types of Firewall, Configuring of Firewall, Open source Firewall, Importance of Firewall, Modem/Router Configuration, WI-FI Configuration, V-LAN Configuration, Proxy Server Configuration

Reference books:

1.Cyber Law in India by Farooq Ahmad – Pioneer Books ISBN No: 978-93-82417-01-9.
2. Ethical Hacking by AnkitFadia ISBN-13: 978-1931841726

SAN – 404 Windows Server 2008 Network Infrastructure (4-Credits)

UNIT I: Understanding and configuring IP and Configuring name resolution

Understanding and configuring network connections, Understanding IP version 4 Addressing, Understanding IP version 6 (IPv6) Addressing, Understanding name resolution in windows server 2008 networks, Deploying a DNS server, Configuring DNS client settings.

UNIT II: Creating a DHCP infrastructure

Installing a DHCP server, Configuring a DHCP server

UNIT III: Configuring IP routing, Protecting network traffic with IPSec.

Routing, Configuring IPSec.

UNIT IV: Connecting to network, and Configuring Windows Firewall and Network Access Protection.

Configuring network address translation, Configuring Wireless Networks, Connecting to remote networks, Configuring Windows Firewall, Configuring Network access protection

UNIT V: Managing Software updates and Monitoring Computers.
Understanding windows server update services, Using windows server update services, Monitoring Event Logs, Monitoring Performance and reliability, Using Network Monitor.

UNIT VI : Managing Files and Managing Printers.

Managing File security, Sharing Folders, Shadow Copies, Managing Printers.

Reference Books:

1) MCTS Self-Paced Training Kit (Exam 70-642): **Configuring Windows Server 2008 Network Infrastructure** - By Tony Northrup , JC Mackin (Microsoft press) ISBN 13: 9780735625129

SAN- 405 Elective – IV (1) CCENT

Cisco Certified Entry Networking Technician (4 – Credits)

UNIT I: Introduction and Overview of Networking

Network Essentials , Network Definitions , Network Topologies, Network Categories, The OSI Reference Model, Functions and Advantages, The Layers, Network Components, Protocol Data Units

UNIT II: TCP/IP

TCP/IP and OSI Reference Model Comparison ,TCP/IP History, Comparing the Models, Application Layer Functions and Protocols, DNS, DHCP, Other Protocols ,Transport Layer Functions and Protocols , TCP, UDP Port Numbers and Multiplexing, Internet and Network Access Layer Functions and Protocols , IP and ICMP, Network Access Layer Protocols

UNIT III: Network Media and Devices

Network Media, Media Terminology, Copper Cabling ,Fiber Cabling , Network Devices, NICs, Transceivers, Repeaters, and Hubs , Bridges and Switches , Routers , Security Devices ,

UNIT IV: Ethernet Fundamentals

Ethernet History, Ethernet Characteristics, Frame Types and Addressing, Media Access, Data Flow, Ethernet Standards

UNIT V: Switching: Moving Data Inside Your Network

Switch Fundamentals, Physical Features , Switch Initialization Functions , Duplex and Speed , Switch Modes , Switch Design Considerations , Switch Installation and Connections , Looping and STP , VLANs

UNIT VI: Routing Essentials and IP Addressing

Routing Fundamentals , Routing Logic and Data Flow , Routed and Routing Protocols , An Introduction to IP Addressing , IP Address Construction, IP Address Classes , IP Address Technologies

References Books :-

1] CCENT Cisco Certified, Entry Networking Technician, Study Guide (Exam 640-822) By Matthew Walker and Angie Walker ISBN-13: 978-0071591140 ISBN-10: 0071591141 Edition: 1st

SAN- 405 Elective – IV (2) VMWARE (4 – Credits)

UNIT I: Introduction to Virtualization Technologies

VMware workstation, VMware player, Virtual box, Introduce VirtualizationIntroduce Virtual machines, Introduce vSphere components

UNIT II: VMware ESX and ESXi(ESX/ESXi 4.1)

Introduce the architecture of ESX and ESXi, Manually configure ESX/ESXi

UNIT III: Networking

Create, configure, and manage vNetwork standard switches, Create, configure, and manage network connections, Create, configure, and manage port groups

UNIT IV: Virtual Machines

Deploy virtual machines using the Create New Virtual Machine wizard, templates, cloning, and VMware vCenter Converter Modify and manage virtual machines Perform Storage vMotion migrations

UNIT V: Access Control AND Resource Monitoring

Control user access through roles and permissions, Control virtual machine access to CPU, memory, and I/O resources, Introduce VMkernel methods for optimizing CPU and memory usage, Monitor resource usage using vCenter Server performance graphs and alarms

UNIT VI: Data Protection

Back up and recover virtual machines using VMware Data Recovery

Reference Book:

1] Virtualization For Dummies Paperback – November 16, 2007 by Bernard Golden (Author) **ISBN-13: 978-0470148310 ISBN-10: 0470148314 Edition: 1st**

SAN- 405 Elective – IV (3) CCNA Security (4 – Credits)

UNIT I: INTERGRATED IS-IS

IS-IS metric, IS-IS PDU, LSP & SNP,IS-IS Addressing configuration

UNIT II: BGP

Introduction to BGP, BGP FSM, eBGP neighbor ship, BGP protocol configuration

UNIT III: IP6

Advantages of IPv6,Dhcp&NDP, Types of ipv6 address and some protocol, RIPng the ipv6, EIGRP for Ipv6,BGP4 +ipv6

UNIT IV: Branch design and WAN

Basic terminology, Connection with IPsec, Connection with DSL, Connection with VPN

UNIT V: Multicast

Multicast Mac & IP address, Multicast solution, version of IGMP, Implementing multicast, Multicast routing protocol.

UNIT VI: Security

Port security, DHCP snooping, Dynamic ARP inspection, VLAN hopping.802.1x and AAA &Switch ACL.

Reference Book:

Cisco CCENT CCNA icnd1 100-101 Wendell odam**ISBN 978-93-325-2096-7**

SAN-408 Open Elective I Language Aptitude (1 Credits)

UNIT I: Professional Skills

Interview Techniques, HR Interview Questions, Getting Prepared for the interview, Telephonic Interview

UNIT II: Group Discussion

Meaning, nature and purpose, Do's & Don'ts of Group Discussion, Topics of the GD, Practical Sessions on GD

UNIT III: Personality Development

Interpersonal Skills, Empathy Skills, Negotiation Skills, Problem Solving, Leadership Skills

UNIT IV: Basics of English

Tense: mood, aspect, usage, Prepositions, Basic Sentence Structure, Framing Questions, Model Auxiliary Verbs & usage, Synonyms & Antonyms, Idioms & Phrases

UNIT V: Writing Skills

Resume Building, Curriculum Vita, Email Drafting; Do's & Don'ts, Essay Writing, Covering Letter

UNIT VI: Presentation Skills and English Aptitude

Body language, eye contact, facial expressions, Opening of Presentation**,** Public Speaking: Do's & Don'ts**,** Topics for the presentation**,** Seminars: Practical Sessions, **English Aptitude**: Spotting Errors, Closet Test**,** Sentence Correction**,** Ordering of Sentences**,** Comprehension**,** Sentence Formation**,** Sentence Improvement

References:

1. English Grammar & Composition, First Edition, Rajendra Pal &Prem
2. LataSuri, Sutan Chand& Sons Delhi, 2012, ISBN:978- 81-8050-868-0
3. Personality Development & Communicative English, Fifth Edition, Dr. T. Bharathi, Neelkamal Publication Private Limited, 2004, ISBN: 81-8316-007-7
4. R. Gupta's Group Discussion & Interviews, First Edition, AnandGanguly, Ramesh Publication House Delhi, ISBN:81-7812-050-X.
5. Practical English Grammar, Fourth Edition, A.J.Thomson& A.V. Martinet, Oxford India, 1986 , ISBN-13:978-0-19-562053-5.

6. Developing Communication Skill, First Edition, Krishana Mohan &MeeraBanerji, Macnillan India, 1990, ISBN-0333929195.
7. Essential English Grammar, Second Edition, Raymond Murphy Cambridege University Press, 1998, ISBN- 13:978-81-7596-029-9.

SAN -408 Open Elective II Logical Reasoning and Quantitative Aptitude

(1 Credits)

UNIT I: General Mental Ability-I

Series Completion, Coding and Decoding, Blood relations, Seating Arrangement, Comparison type questions.

UNIT II: General Mental Ability-II

Directions sense test, logical venn diagrams, Inserting the missing character, data sufficiency.

UNIT III: Logical Deduction

Logic, statement arguments, statement assumptions, statement conclusion.

UNIT IV: Arithmetical Ability-I

Numbers, Simplification, Average, Problems on ages, Percentage, Probability.

UNIT V: Arithmetical Ability-II

Profit and loss, ratio and proportion, time and work, simple interest compound interest, calendar.

UNIT VI: Data Interpretation

Tabulation, Bar graphs, Pie charts, line graphs

Reference books:

1. Quantitative Aptitude by Dr. R S Aggarwal, Revised edition, ISBN 81-219-2498-7
2. A Modern Approach to Verbal Reasoning by Dr. R S Aggarwal, S. Chand and Company pvt. Ltd., ISBN 81-219-0552-4

SAN -408 Open Elective III: DBMS Administration (1 Credits)

UNIT I: Client/Server Concepts

Client server Architecture,Invoking Client Programs, MySQL Client Program-Using MySQL interactively, Statement Terminators, Using Script Files with MySQL, MySQL Output Formats, Client Commands and SQL Statements, Using Server-Side Help, Using the – safeupdates Option,

UNIT II: MySQL Architecture

Client/Server Overview, Communication Protocols, the SQL Parser and Storage Engine Tiers, How MySQL Uses Disk Space, How MySQL Uses Memory, Types of MySQL Distributions, Starting and Stopping MySQL Server on Windows, Starting and Stopping MySQL Server on UNIX, Runtime MySQL Configuration, Log and Status Files, Loading Time Zone Tables, Security-Related Configuration, Setting the Default SQL mode , Upgrading MySQL

UNIT III: Locking

Locking Concepts, Explicit Table Locking, Advisory Locking

UNIT IV: Storage Engines

MySQL Storage Engines, The MyISAM Engine, The MERGE Engine, The InnoDB Engine, The MEMORY Engine, The FEDERATED Engine,The Cluster Storage Engine, Other Storage engines,

UNIT V: Data (Table) Maintenance

Types of Table Maintenance Operations, SQL Statements for Table Maintenance, Client and Utility Programs for Table Maintenance, Repairing, InnoDB Tables, Enabling MyISAM Auto-Repair

UNIT VI: Data Backup and Recovery Methods

Introduction, Binary Versus Textual Backups, Making Binary Backups, Making Text Backups, Backing Up Log and Status Files, Replication as an, Aid to Backup, MySQL Cluster as Disaster Prevention, Data Recovery

SAN-408 Open Elective IV: Cyber Crime & Cyber Security (1 Credits)

Why Learn About Cyber Crime.

Introduction to Cyber Crime.

Types of Cyber Crime.

Hacking passwords of MS-Office Files & Email for ethical use.

Sending Fake Emails/SMS.

Email Tracing.

Chatting In LAN/ Transferring Files in LAN. Sharing Desktop.

Preventing Credit/Debit card Fraud.

Screen Recording.

Introduction to Cyber Security.

Online Safety Tips.

Protecting Password.

Stenography/Hiding Information.

Encrypting Decrypting Information.

Identifying secure websites.

Cyber Laws.

SAN-408 Open Elective V: Internet Programming (1Credits)

UNIT I: BASIC NETWORK AND WEB CONCEPTS

Internet standards - TCP and UDP protocols - URLs - MIME - CGI - Introduction to SGML.

UNIT II: JAVA PROGRAMMING

Java basics - I/O streaming - files - Looking up Internet Address - Socket programming - client/server programs - E-mail client - SMTP - POP3 programs - web page retrieval - protocol handlers - content handlers - applets - image handling - Remote Method Invocation.

UNIT III: SCRIPTING LANGUAGES

HTML - forms - frames - tables - web page design - JavaScript introduction - control structures - functions - arrays - objects - simple web applications.

UNIT IV: DYNAMIC HTML

Dynamic HTML - introduction - cascading style sheets - object model and collections - event model - filters and transition - data binding - data control - ActiveX control - handling of multimedia data

UNIT V: SERVER SIDE PROGRAMMING

Servlets - deployment of simple servlets - web server (Java web server / Tomcat / Web logic) - HTTP GET and POST requests - session tracking - cookies - JDBC - simple web applications - multi-tier applications.

REFERENCES

1. Deitel, Deitel and Nieto, "Internet and World Wide Web - How to program", Pearson Education Publishers, 2000.
2. Elliotte Rusty Harold, "Java Network Programming", O'Reilly Publishers, 2002
3. R. Krishnamoorthy& S. Prabhu, "Internet and Java Programming", New Age International Publishers, 2004.
4. Thomno A. Powell, "The Complete Reference HTML and XHTML", fourth edition, Tata McGraw Hill, 2003.
5. Naughton, "The Complete Reference - Java2", Tata McGraw-Hill, 3rd edition, 1999.