New Ideas YT
PART OF AN EXAMJILA
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रा.इ.सू.प्रौ.सं
NIELIT

A LEVEL SYLLABUS

Prepared for NIELIT O Level

Network Management

A9.3-R5.1

Prepared By
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NIELIT A Level (A9.3-R5.1)

? Syllabus पढ़ रहे हैं... या Exam Clear करना है?

- ❖ 30–47% Questions Repeat
- ❖ Same Pattern | Same Question | Same Options

Complete End-to-End Preparation

✔ Theory + MCQs

✔ Objective (MCQs) Mastery

✔ ✔ Strategic Exam-Oriented Approach

Main Course Highlights

- ➢ MCQs Practice Question Bank
- ➢ Chapterwise Colorfull PDF Notes
- ➢ Classes
- ➢ Old Solved Papers + Video Explanation
- ➢ One-Liner Important Points PDF

Bilingual Content

Hinglish Classes |English Notes

Don't Risk Your Attempt

Time कम है | Target Clear है | Strategy Smart होनी चाहिए

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Detailed Syllabus

Network Management (A9.3-R5.1)

(i) Introduction To Computer Networks

Introduction: Definition of a Computer Network; What is a Network?, Components of a computer network: Use of Computer networks; Networks for companies, Networks for people, Social Issues: Classification of networks; Based on transmission technology, Based on the their scale, Local Area Networks(LANs), Metropolitan Area Networks(MANs), Wide Area Networks(WANs), Computer topologies: Physical vs Logical Topology, Types of topologies: Linear Bus Topology, Ring Topology, Star Topology, Hierarchical or Tree Topology, Topology Comparison, Considerations when choosing a Topology, Modes of communication: Simplex, Half Duplex, Full Duplex, Concept of Channel, Sender and receiver with Communication process

(ii) Introduction: Networks Layers / Models

Protocol hierarchy, Design issues for the layers, Merits and De-merits of Layered Architecture, Service Primitives: Reference models; The OSI Reference Model, The TCP/IP Protocol Model, Comparison of the OSI Reference Model & the TCP/IP Protocol Models: Network standardization; Who's who in the telecommunication world?, Who's who in the standards world, Who's who in the Internet standards world?, TCIP/IP Protocol Suite.

(iii) Physical Layer

Introduction: Basic Functions of Physical Layer, Digital Signals: Bit rate, Bit length, Transmission of digital Signals, Analog Signals: Amplitude, Phase, Frequency,Wavelength, Transmission Impairments, Data Rate

limits: Noiseless Channel: Nuyquist Bit Rate, Noisy Channel: Shannon capacity, Performance: Bandwidth, Throughput, Goodput, Latency (delay), Jitter. Concept of Serial and Parallel transmission, Switching; Circuit switching, Message switching, Packet switching, Virtual Switching, Multiplexing; FDM – Frequency division multiplexing, WDM –Wavelength division multiplexing, TDM – Time Division Multiplexing: Synchronous and Statistical, Transmission Media: Guided Media, Unguided Media, PSTN, Modems, DSL and other standards, Cable Networks: HFC,CM,CMTS.

(iv) Data Link Layer

Introduction, Basic functions of Data Link Layer (LLC and MAC Sublayers): Framinng, CRC, Checksum, Protocols:Stop andWait, Go- Back-N, Selective Repeat,Piggybacking, HDLC, Point to Point, Multiple Access: Random Access :CSMA / CA, CSMA / CD, Controlled Access: Reservation, Polling, Token Passing,Wired LANS: IEEE Standards,Wireless LANs: IEEE Standards.

(v) Network Layer

IPv4 Addressing, IPv4 Subnetting: CIDR, VLSM, NAT, NAT Types, IPv6 Addressing, Transition from IPv4 to IPv6, Address Mapping: ARP, RARP, BOOTP, DHCP, ICMP, ICMPv6 and IGMP, Concept of Forwarding of Packets by Routers, Unicast Routing Protocols: Distance Vector, Link State, Path Vector with examples of each.

(vi) Transport Layer

Introduction, Basic Functions of Transport Layer: Client server Process with Port Numbers concept in detail, Concept of Socket Multiplexing vs De-multiplexing, Connectionless vs Connection Oriented, Reliable vs Unreliable, UDP in detail, TCP in detail.

(vii) Congestion Control

Flow control vs. congestion control. Congestion Basics, Congestion Control: OpenLoop Closed-Loop, Concept of Quality of Service, techniques to improve QoS.

(viii) Application Layer

Basic Function of Application Layer, Concept of Namespace and DNS, Basics of Remote Logging (telnet and ssh), E-mail: Architecture, Introduction to SMTP, POP, IMAP protocols, File Transfer: FTP, Anonymous FTP and TFTP, Concept of www and HTTP: www, http, https protocols, Basics of Network Management System: SNMP protocol

(ix) Networking Devices Introduction; Goal of networking devices:

Repeaters and their use, Hubs, Bridges, Managed vs Non Manageable switches, L-2 Switches, L-3 Switches, Stackable Switches, Concept of Collision Domain, Working of Hubs and Switches, Concept of Port Density, Concept of Broadcast Domain, Routers: Dedicated Hardware versus Server-Based Routers, Advantages and Disadvantages of dedicated hardware routers, Drawbacks of Routers, Gateways: Advantages of Gateways, Gateways Functionality, Other Devices: Brouter, Proxy Server, Wireless Access Point (WAPs)/Wireless Router, Wireless LAN Extender and Wireless LAN Controller

(x) Fundamentals of Mobile Communication

Introduction to wireless communication, wireless transmission: frequencies & regularion, signals, antena, multiplexing, modulation, spread spectrum & cellualr system. Evolution of Mobile Generation Technologies: 1G, 2G, 3G, 4G and 5G.

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