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## UNIT I

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1. Explain ISO/OSI reference model.

- \_ Physical layer
  - \_ Data link layer
  - \_ Network layer
  - \_ Transport layer
  - \_ Session layer
  - \_ Presentation layer
  - \_ Application layer
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2. Explain the **topologies** of the network.

- \_ Mesh topology
  - \_ Star topology
  - \_ Tree topology
  - \_ Bus topology
  - \_ Ring topology
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3. Explain the categories of networks.

- \_ Local Area Network(LAN)
  - \_ Metropolitan Area Network(MAN)
  - \_ Wide Area Network(WAN)
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4. Explain coaxial cable & fiber optics.

- \_ Coaxial cable
- \_ Coaxial cable standards
- \_ Coaxial cable connectors
- \_ Fiber optics
- \_ Propagation modes
- \_ Fiber sizes

- \_ Cable composition
  - \_ Light sources for optical cable
  - \_ Fiber optic connectors
  - \_ Advantages & disadvantages of optical fiber
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5. Explain line coding (digital to digital conversion).

- \_ Unipolar
  - \_ DC component
  - \_ Synchronization
  - \_ Polar
  - \_ Non return to zero(NRZ)
  - \_ NRZ-L
  - \_ NRZ-I
  - \_ Return to zero
  - \_ Biphasic
  - \_ Manchester
  - \_ Differential Manchester
  - \_ Bipolar
  - \_ Alternate Mark Inversion(AMI)
  - \_ Bipolar 8-zero substitution(B8ZS)
  - \_ High-Density Bipolar 3(HDB3)
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## **UNIT II**

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1. Explain error detection and error correction techniques.

- \_ Types of errors
- \_ Single bit error
- \_ Burst error
- \_ Error detection
- \_ Vertical redundancy check(VRC)
- \_ Longitudinal redundancy check(LRC)

- \_ Cyclic redundancy check(CRC)
  - \_ Checksum
  - \_ Error correction
  - \_ Single-bit error correction
  - \_ Hamming code
  - \_ Burst error correction
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## 2. Explain error control mechanism.

- \_ Stop and wait ARQ
  - \_ Sliding window ARQ
  - \_ Go back-n
  - \_ Selective-reject
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## 3. Explain the flow control mechanism

- \_ Stop and wait
  - \_ Sliding window.
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## 4. Explain the timers and time registers in FDDI.

### Time registers

- \_ Synchronous allocation(SA)
  - \_ Target token rotation time(TTRT)
  - \_ Absolute maximum time(AMT)
  - \_ Timers
  - \_ Token rotation timer(TRT)
  - \_ Token holding timer(THT)
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## 5. Explain about Ethernet.

- \_ Access method :CSMA/CD
  - \_ Addressing
  - \_ Electrical specification
  - \_ Frame format
  - \_ Implementation:
    - \_ 10 base 5 :Thick Ethernet
    - \_ 10 base 2 :Thin Ethernet
    - \_ 10 base T :Twisted-pair Ethernet
    - \_ 1 base 5 :Star LAN
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## 6. Explain the frame format for token ring and token bus.

- \_ Access method: Token passing
  - \_ Priority and reservation
  - \_ Time limits
  - \_ Monitor stations
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## 7. Explain about HDLC.

- \_ Station types:
  - \_ Primary station
  - \_ Secondary station
- \_ Configurations:
  - \_ Unbalanced configuration
  - \_ Symmetrical configuration
  - \_ Balanced configuration
- \_ Modes of communication:
  - \_ Normal Response Mode(NRM)
  - \_ Asynchronous Response Mode(ARM)
  - \_ Asynchronous Balanced Mode(ABM)
- \_ Frames :
  - \_ Flag field
  - \_ Address field

- \_ Control field
  - \_ Information field
  - \_ FCS field
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## UNIT III

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1. Explain the two approaches of packet switching techniques.

- \_ Datagram approach
  - \_ Virtual circuit approach
  - \_ Switched virtual circuit(SVC)
  - \_ Permanent virtual circuit(PVC)
  - \_ Circuit – switched connection versus virtual – circuit connection
  - \_ Path versus route
  - \_ Dedicated versus shared
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2. Explain IP addressing method.

- \_ Internetwork protocol (IP)
  - \_ Datagram
  - \_ Addressing
  - \_ Classes
  - \_ Dotted decimal notation
  - \_ A sample internet
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3. Define routing & explain distance vector routing and link state routing.

- \_ Distance vector routing
- \_ Sharing information
- \_ Routing table
- \_ Creating the table
- \_ Updating the table
- \_ Updating algorithm

- \_ Link state routing
  - \_ Information sharing
  - \_ Packet cost
  - \_ Link state packet
  - \_ Getting information about neighbors
  - \_ Initialization
  - \_ Link state database
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#### 4. Define bridge and explain the type of bridges.

- \_ Bridges
  - \_ Types of bridges
  - \_ Simple bridge
  - \_ Multiport bridge
  - \_ Transparent bridge
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#### 5. Explain subnetting

- \_ Subnetting
  - \_ Three levels of hierarchy
  - \_ Masking
  - \_ Masks without subnetting
  - \_ Masks with subnetting
  - \_ Finding the subnetwork address
  - \_ Boundary level masking
  - \_ Non-boundary level masking
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#### 6. Write short notes about repeaters, routers and gateways.

- \_ Repeaters
- \_ Routers
- \_ Routing concepts
- \_ Least-cost routing

- \_ Non adaptive routing
  - \_ Adaptive routing
  - \_ Packet lifetime
  - \_ Gateways
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## UNIT IV

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1. Explain the duties of transport layer.

- End to end delivery
  - Addressing
  - Reliable delivery Error control Sequence control Loss control Duplication control
  - Flow control
  - Multiplexing
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2. Explain socket in detail.

- Introduction Explanation program
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3. Explain UDP & TCP.

- \_ User Datagram Protocol(UDP)
- \_ Source port address
- \_ Destination port address
- \_ Total length
- \_ Checksum
- \_ Transmission Control Protocol(TCP)
- \_ Source port address
- \_ Destination port address
- \_ Sequence number
- \_ Acknowledgement number
- \_ Header length
- \_ Reserved

- \_ Control
  - \_ Window size
  - \_ Check sum
  - \_ Urgent pointer
  - \_ Options and padding
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4. Explain about congestion control.

- \_ Congestion avoidance
  - \_ BECN
  - \_ FECN
  - \_ Four situations
  - \_ Discarding
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5. Explain leaky bucket and token bucket algorithm

- \_ Leaky bucket algorithm
  - \_ Leaky bucket
  - \_ Switch controlling the output rate
  - \_ Flowchart
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## **UNIT V**

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1. Explain the functions of SMTP.

System for sending messages to other computer users based on e-mail addresses. SMTP provides mail exchange between users on the same or different computers.

- User Agent
  - Mail Transfer Agent
  - Multipurpose Internet Mail Extensions
  - Post Office Protocol
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## 2. Write short notes on FTP.

- Transfer a file from one system to another.
  - TCP connections
  - Basic model of FTP
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## 3. Explain about HTTP.

- HTTP transactions
  - HTTP messages
  - URL
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## 4. Explain the WWW in detail.

- Hypertext & Hypermedia
  - Browser Architecture
  - Categories of Web Documents
  - HTML
  - CGI
  - Java
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## 5. Explain the type of encryption/decryption method.

Conventional Methods:

Character-Level Encryption: Substitutional & Transpositional

Bit-Level Encryption:

Encoding/Decoding, Permutation, Substitution, Product, Exclusive-Or & Rotation

Public key Methods

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## 6. Explain about RSA algorithm.

- Public key Encryption technique.
- Encryption algorithm

- Decryption algorithm
  - Security in RSA
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7. Explain about secret key encryption algorithm.

- Data Encryption Standard
- Algorithm
- Sub key generation