COMPUTER NETWORKS

PART B

UNIT-I

1. Explain ISO/OSI reference model.

- Physical layer
- Data link layer
- Network layer
- Transport layer
- Session layer
- Presentation layer
- Application layer

2. Explain the topologies of the network.

- Mesh topology
- Star topology
- Tree topology
- Bus topology
- Ring topology

3. Explain the categories of networks.

Local Area Network(LAN)
Metropolitan Area Network(MAN)
Wide Area Network(WAN)

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

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
- Biphase Manchester
- Differential Manchester

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- Bipolar
- Alternate Mark Inversion(AMI)
- Bipolar 8-zero substitution(B8ZS)
- High-Density Bipolar 3(HDB3)

6.Explain error detection techniques.

- Types of errors
  - Single bit error
  - Burst error
- Error detection
  - Vertical redundancy check(VRC)
  - Longitudinal redundancy check(LRC)
  - Cyclic redundancy check(CRC)
  - Checksum

7.Explain briefly about the error correction techniques.

- Error correction
  - Single-bit error correction
  - Hamming code
  - Burst error correction

8. Explain error control mechanism.

Stop and wait ARQ
Sliding window ARQ
Go back-n
Selective-reject

9. Explain the flow control mechanism

Stop and wait
Sliding window.

10.Explain about framing?

Byte Oriented Protocols
Bit-Oriented Protocols
Clock Based Framing

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UNIT II

1. 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)

2. Explain about Ethernet.

- Access method :CSMA/CD
- Addressing
- Electrical specification
- Frame format
- Implementation:
    1. 10 base 5 :Thick Ethernet
    2. 10 base 2 :Thin Ethernet
    3. 10 base T :Twisted-pair Ethernet
    4. 1 base 5 :Star LAN

3. Explain the frame format for token ring and token bus.

Access method:

Token passing
Priority and reservation
Time limits
Monitor stations

4. Define bridge and explain the type of bridges.

- Bridges
- Types of bridges

Simple bridge
Multiport bridge
Transparent bridge

5. Explain about HDLC.

Station types:

Primary station
Secondary station

Configurations:

Unbalanced configuration
Symmetrical configuration
Balanced configuration

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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

6.Explain about the CSMA?

Definition
Propagation time
Types of CSMA

7.Explain briefly about wireless LAN?

Bluetooth
WI-Fi-802.11
WiMAX-802.16

8.Explain briefly about the cell Switching?

Cells
Cell Size
Cell Format

9.What is Wi Fi?Explain briefly?

Definition
Physical properities
Collision Avoidance
Distribution System
Frame format

10.Explain the procedure for the implementation of Bridges?

Spanning tree algorithm
Broadcast and multicast
Limitation of bridges.

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UNIT III

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

2. Explain IP addressing method.

- Internetwork protocol (IP)
- Datagram
- Addressing
  - Classes
  - Dotted decimal notation
  - A sample internet

3.Define Internetworking?Explain about the ARP,DHCP?

- Definition of Internetworking
- ARP Packet format
- ATMARP
- DHCP Packet format

4.Explain briefly about the Queuing discipline?

- Definition of Queuing discipline
- FIFO
- Fair Queuing

5. 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

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Initialization
Link state database

6. 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

7.Define Subnetting?Explain about the CIDR & BGP?

- Subnetting
- CIDR
  - Route aggregation
  - IP Forwarding Revisited.
- BGP
  - Network connecting 2 autonomous systems
  - Integrating Interdomain and Intradomain Routing

8.Explain about the IPv6?

- Historical Perspective
- Addresses and Routing
- Address space Allocation
- Packet Format

9.What is multicast ? Explain briefly?

- Definition of multicast
- Multicast Addresses
- Multicast Routing
- Interdomain Multicast

10. 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

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

2. Explain socket in detail.

Introduction
Explanation
program

3. Explain UDP in details?

- User Datagram Protocol(UDP)
    - Source port address
    - Destination port address
    - Total length
    - Checksum

4.Explain TCP in detail?

- 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

4.What are the types of Flow control mechanism in TCP?

- Transmit flow control
- Hardware flow control
- Software flow control
- Open-loop flow control
- Closed-loop flow control

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5. Explain about congestion control.

- Congestion avoidance
  - BECN
  - FECN
  - Four situations
- Discarding

6. Explain leaky bucket and token bucket algorithm

Leaky bucket algorithm
- Leaky bucket
- Switch controlling the output rate
- Flowchart

7.Describe briefly about the Connection Establishment and Termination?

- Three-way Handshake
- State –Transition Diagram

8.What is Adaptive Retransmission ?Explain in detail?

- Definition
- Original Algorithm
  - Karn/Partridge Algorithm
  - Jacobson/Karels Algorithm
- Implementation

9.Explain about the Congestion Avoidance Mechanism?

- DEC bit
- Random Early Detection(RED)
- Source-Based Congestion Avoidance

10.What is QoS?Explain briefly?

- Application Requirements
- Real –Time Audio Example
- Taxonomy of Real-Time Applications
- Approaches to Qos Support

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UNIT V

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

2. Write short notes on FTP.

Transfer a file from one system to another.
TCP connections
Basic model of FTP

3. Explain about HTTP.

HTTP transactions
HTTP messages
URL

4.Explain about Name Service(DNS)?

Definition of DNS
Domain Hierarchy
Name Servers
Name Resolution

5.Explain briefly about the Network management (SNMP)?

Definition
SNMP Request/Reply Protocol.
MIB
SNMP Server/Client.

6. Explain the WWW in detail.

Hypertext & Hypermedia
Browser Architecture
Categories of Web Documents
HTML
CGI
Java

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7. 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

8. Explain about RSA algorithm.

Public key Encryption technique.

Encryption algorithm

Decryption algorithm

Security in RSA

9. Explain about secret key encryption algorithm.

Data Encryption Standard

Algorithm

Sub key generation

10.Explain about Secure systems?

Pretty Good Privacy(PGB)

Secure Shell(SSH)

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