

BT-205 Basic Computer Engineering Unit-IV Notes

UNIT-IV TOPICS

- Computer Networking
- Goals of Networking
- ISO-OSI Model
- TCP/IP Model
- Internetworking Concepts
- Networking Devices
- Internet and WWW
- E-Commerce
- Computer Security Basics
- Viruses, Worms, Malware, Trojans
- Spyware and Anti-Spyware
- Cyber Attacks and Threats
- Firewall and Security Measures
- Computer Ethics
- Cyber Laws
- Good Security Habits

1. COMPUTER NETWORK

Computer network is collection of interconnected computers used to share resources and information.

Goals of Networking:

- Resource sharing
- Communication
- Data sharing
- Reliability
- Cost reduction

Advantages:

- Fast communication
- Easy data access
- Internet sharing

2. TYPES OF NETWORKS

(a) LAN (Local Area Network)

Small geographical area network.

(b) MAN (Metropolitan Area Network)

Covers city area.

(c) WAN (Wide Area Network)

Large geographical area network.

3. ISO-OSI MODEL

OSI model is seven-layer reference model developed by ISO.

Layers of OSI Model:

1. Physical Layer
2. Data Link Layer
3. Network Layer
4. Transport Layer
5. Session Layer
6. Presentation Layer

7. Application Layer

Functions of Layers:

Physical Layer:

Transmission of raw bits.

Data Link Layer:

Error detection and framing.

Network Layer:

Routing and addressing.

Transport Layer:

Reliable data transfer.

Session Layer:

Session management.

Presentation Layer:

Data translation and encryption.

Application Layer:

User services like email and web browsing.

4. TCP/IP MODEL

TCP/IP is communication protocol suite used on internet.

Layers of TCP/IP Model:

- Network Access Layer
- Internet Layer
- Transport Layer
- Application Layer

Advantages:

- Reliable communication
- Internet compatibility

5. INTERNETWORKING CONCEPTS

Internetworking connects multiple networks together.

Devices Used:

- Hub
- Switch
- Router
- Gateway
- Bridge
- Modem

6. HUB

Hub connects multiple devices in network.

Characteristics:

- Broadcast device
- Works on physical layer

7. SWITCH

Switch forwards data to specific device.

Advantages:

- Faster communication
- Reduced collisions

8. ROUTER

Router connects different networks.

Functions:

- Routing
- Packet forwarding

9. INTERNET

Internet is worldwide network of networks.

Services:

- Email
- Web browsing
- File transfer
- Online communication

10. WORLD WIDE WEB (WWW)

WWW is collection of web pages accessed through internet.

Main Components:

- Web browser
- Web server
- URL

11. E-COMMERCE

E-commerce means buying and selling products online.

Advantages:

- Global business
- 24x7 services
- Fast transactions

Applications:

- Online shopping
- Internet banking
- Ticket booking

12. COMPUTER SECURITY

Computer security protects systems and data from unauthorized access.

Goals:

- Confidentiality
- Integrity
- Availability

13. VIRUS

Virus is malicious program that damages files and systems.

Effects:

- Data corruption
- Slow system

- File deletion

14. WORMS

Worm is self-replicating malware spreading through networks.

15. TROJAN HORSE

Trojan appears useful but performs malicious actions.

16. SPYWARE

Spyware secretly collects user information.

17. MALWARE

Malware means malicious software harmful to systems.

Examples:

- Virus
- Worm
- Trojan
- Spyware

18. ANTI-SPYWARE SOFTWARE

Software used to detect and remove spyware.

19. CYBER ATTACKS

(a) Money Laundering

Illegal transfer of money through online methods.

(b) Information Theft

Stealing confidential information.

(c) Cyber Pornography

Illegal distribution of explicit content online.

(d) Email Spoofing

Sending fake emails using false identity.

(e) Denial of Service (DoS)

Overloading server to stop services.

(f) Cyber Stalking

Online harassment using internet.

(g) Logic Bombs

Malicious code activated under specific condition.

(h) Hacking

Unauthorized access to computer systems.

(i) Spamming

Sending unwanted bulk emails.

(j) Cyber Defamation

Publishing false information online.

(k) Pharming

Redirecting users to fake websites.

20. FIREWALL

Firewall is security system controlling network traffic.

Functions:

- Blocks unauthorized access
- Monitors incoming and outgoing traffic

21. COMPUTER ETHICS

Computer ethics are moral principles related to computer use.

Good Practices:

- Respect privacy
- Avoid piracy
- Use licensed software

22. CYBER LAWS

Cyber laws are legal rules for internet and digital activities.

Applications:

- Prevent cyber crimes
- Protect online transactions

23. GOOD COMPUTER SECURITY HABITS

- Use strong passwords
- Install antivirus software
- Avoid suspicious links
- Update software regularly
- Backup important data

MOST IMPORTANT 14 MARK QUESTIONS

1. Explain computer networking and goals of networking.
2. Explain ISO-OSI model and functions of all layers.
3. Explain TCP/IP model with diagram.
4. Explain networking devices such as hub, switch and router.
5. Explain internet and World Wide Web.
6. Explain E-commerce and its applications.
7. Explain viruses, worms, trojans and spyware.
8. Explain different cyber attacks and security threats.
9. Explain firewall and computer security measures.
10. Explain cyber laws and computer ethics.
11. Explain good computer security habits.

IMPORTANT 7 MARK QUESTIONS

1. Define computer network.

2. Explain LAN, MAN and WAN.
3. Explain OSI model briefly.
4. Explain TCP/IP model.
5. Explain router and switch.
6. Explain firewall.
7. Explain virus and malware.
8. Explain cyber stalking and phishing.
9. Explain E-commerce.
10. Explain computer ethics.

EXAM TIPS

- Draw neat OSI model diagrams.
- Learn networking devices carefully.
- Revise cyber attack definitions regularly.
- Focus on firewall and security measures.
- Practice differences between LAN, MAN and WAN.