

# Syllabus

## Panjab University

### Computer Networks

BCA-16-501

LTP Cr 6--3

Time Duration : 3 Hrs.

External Marks : 65

Internal Marks : 10

**Objective :** *The objective of the course is to :*

- Offer knowledge about computer network related hardware and software using a layered architecture.
- Provide good understanding of the concepts of network security, wireless and various emerging network technologies.

**Note :**

- (i) The Question Paper will consist of Four Sections.
- (ii) Examiner will set total of NINE questions comprising TWO questions from each Section and One compulsory question of short answer type covering whole syllabi.
- (iii) The students are required to attempt One question from each Section and the Compulsory question.
- (iv) All questions carry equal marks unless specified.

### SECTION-A

**Computer Network :** Network Hardware and Software, Network Topologies, Uses of Computer Networks, OSI Reference Model, TCP/IP reference model, Comparison of OSI with TCP/IP model.

**Physical Layer :** Transmission media : Twisted pair, Coaxial cable, Fiber optics, Wireless Transmission (Radio, Microwave and Infrared), Switching : Circuit Switching, Message Switching, Packet Switching & their comparisons. ISDN and its services, Multiplexing : Frequency Division, Time Division, Wave Length Division, MODEMS.

## SECTION-B

**Data Link Layer :** Design Issue, Framing, Errors Detection and Correction Code: Check sum, CRC, Hamming code, Data Link Protocols for noisy and noiseless channels, Sliding Window Protocol : Stop and Wait ARQ, Go-back-N ARQ, Selective Repeat ARQ.

**Medium Access Sub-Layer :** Introduction to Static and Dynamic channel allocation, IEEE standards 802.3.

## SECTION-C

**Network Layer :** Design Issues, network layer addressing, network layer datagram, IP addressed Classes. Sub netting-Sub network, Subnet mask, Routing Algorithm : Shortest Path Routing, Flooding, Broadcast and Multicast routing, Congestion control : Principles of Congestion Control, Congestion prevention policies, Leaky bucket and token bucket algorithms.

## SECTION-D

**Application Layer :** Domain Name System (DNS), DNS name space, DNS Servers, World Wide Web, HTTP, e-mail : Architecture and Services, Message Component, Multipurpose Internet Mail Extensions (MIME), Simple Mail Transfer Protocol (SMTP), Post Office Protocol (POP), Remote Login and File transfer protocol, Introduction to Network Security.