Syllabus

MCA-2103: COMPUTER NETWORKS
Max Marks: 80
Time: 3 Hrs.
Note: There shall be nine questions in all. Question no. 1 shall be compulsory, consisting of eight short answer type questions covering the entire syllabus. Two questions will be asked from each unit. Student will have to attempt one question from each unit.
Each question shall carry equal marks.
Learning Objectives:
1. Aim of this course is to discuss and explain about basics of data communication and networking concepts.
2. After studying the subject student will be able to understand the working of different types of protocol of networking and model such as OSI reference model, CSMA/CD, TCP/IP implementation, LANs/ WANs, internetworking technologies, Routing and Addressing etc.

Unit – I
Data Communication: Introduction of data communication; analog and digital signals; asynchronous and synchronous transmission; Data Encoding and Modulation Techniques, Broadband and Baseband transmission; Pulse Code Modulation, bandwidth, channel, baud rate of transmission; Multiplexing; Transmission Medium; transmission errors - error detection and correction.

Unit – II
Network Classification: PAN, LAN, MAN, WAN and wireless network; Network Topology; Network Modes; internet, intranet and Extranet; X.25, frame relay, narrow band and broad band ISDN, ATM.

Network Reference Models: Layered architectures, protocol hierarchies, interface and services: ISO- OSI reference model, TCP/IP reference model; internet protocol stacks.

Unit – III
Data Link Layer Functions and Protocols: Framing, Error-control, Flow-control; sliding window protocol; HDLC; Shortest Path Algorithm, Flooding, Hierarchical Routing, Link State and Distance Vector Routing

Medium Access Sub layer: CSMA/CD Protocol, switched and fast Ethernet, Token Bus, Token Ring, FDDI, IEEE standards for LAN and MAN; satellite networks.

Unit – IV
Network functions and protocols: Switching Concept; cell switching, routing and congestion control, TCP/IP protocol architecture.
Network Device: Repeater, hub, switch, router and gateway; IRC; TCP and UDP.
Network Applications: File transfer protocol, E- mail, World Wide Web, Client-Server Environment, DNS.

Course Outcomes:
CO1: Recognize and Describe about the working of Computer Networks.
CO2: Illustrate reference models with layers, protocols and interfaces.CO3: Summarize functionalities of different Layers
CO4: Combine and distinguish functionalities of different Layers.
CO5: Model the LAN and WAN configuration using different media.
CO6: Examine problems of a computer networks.

Cartoon Networks Important Topics
Unit - 1 -> transmission errors - error detection and correction, Multiplexing
Unit - 2 -> internet, intranet and Extranet, OSI reference model, TCP/IP reference model;
Unit - 3 -> Medium Access Sub layer: CSMA/CD Protocol, Link State and Distance Vector Routing, Flow Control
Unit - 4 -> TCP and UDP, Network Device: Repeater, hub, switch, router and gateway, File transfer protocol

2-3 Marks
X.25
Frame relay
ISDN
Atm
Cell switching
IRC
Puls and modulation