

<b>B. Sc. IT (HONS.) 2020: 4<sup>th</sup> Semester</b>				
<b>Course</b>	<b>Credits-06</b>		<b>Total Marks- 90</b>	
	<b>Theory</b>	<b>Practical</b>	<b>Theory</b>	<b>Practical</b>
<b>BIT420C2: DATA COMMUNICATION AND COMPUTER NETWORKS</b>	<b>04</b>	<b>02</b>	<b>60</b>	<b>30</b>

**THEORY: 4 CREDITS;**

**MAX. MARKS: 60**

**MIN. MARKS: 24**

#### **UNIT-I**

**Data communication concepts:** introduction to data communication, data communication model, data communication modes (simplex, half-duplex, full duplex).

**Characteristics of signals:** (Amplitude, frequency, period, wavelength, S/N ratio), bandwidth & channel capacity, Nyquist law for noiseless channel and Shannon's, law for noisy channel, data rate v/s baud rate.

#### **UNIT-II**

**Data communication media:** guided transmission media- twisted pair cable, coaxial cable, optical fiber cable (single mode, multimode step index fiber, multimode graded index fiber). Unguided transmission media (wireless) - radio waves, infrared waves.

#### **UNIT-III**

Goals and Application of Networks, Classification of Networks: LAN, MAN, & WAN, Network Topologies: (Mesh, Star, Bus, and Ring topologies).

LAN Technologies: Ethernet, FDDI, CSMA/CD, Virtual Local Area Network (VLAN).

#### **UNIT-IV**

**Switching Techniques:** Circuit Switching, Message Switching & Packet Switching, Multiplexing.

**Network standards & Protocols:** OSI Reference Model, TCP/IP Model and their Comparison. Connection oriented and Connectionless Approaches.

**PRACTICAL: 2 CREDITS;**

**MAX. MARKS: 30**

**MIN. MARKS: 12**

**Note: The Practical Component shall be based on the Unit-I to Unit-IV**

#### **BOOKS RECOMMENDED:**

1. "Data and Computer Communications" by William Stalling.
2. "Data Communication & Networking" by Behrouz A Forouzan.
3. "Computer Networks" by Andrew Tanenbaum.
1. "Data communications and networks" by Godbole
1. Data & Computer Communication-- William Stallings
2. Data Communications and Networking –Behrouz A. Forouzan
3. Computer Networks—Andrew Tanenebaum