Resolution and sampling frequency – Multiplexing of analog inputs – Single-ended and differential inputs – Different strategies for sampling of multi channel analog inputs. Concept of universal DAQ card – Use of timer-counter and analog outputs on the universal DAQ card.

UNIT 3

Cluster of Instruments in System: Interfacing of external instruments to a PC – RS 232C, RS – 422, RS 485 and USB standards – IEEE 488 standard – ISO –OSI model for series bus – introduction to bus protocols of MOD bus and CAN bus.

UNIT 4

Graphical Programming Environment in VI: Concepts of graphical programming – Lab-view software – Concept of VIs and sub VIs – Display types – Digital – Analog – Chart – Oscilloscope types – Loops – Case and sequence structures – Types of data – Arrays – Formulate nodes – Local and Global variables – String and file I/O.

UNIT 5

Analysis Tools and Simple Application in VI: Fourier transform – Power spectrum – Correlation – Windowing and filtering tools – Simple temperature indicator – ON/OFF controller – PID controller – CRO emulation – Simulation of a simple second order system – Generation of HTML page.

Reference Books:

1. S. Gupta and J P Gupta,"**PC Interfacing for Data Acquisition and Process Control"**, Instrument Society of America, 1994
2. Peter W Gofton , "**Understanding Serial Communication**", Sybes International, 2000
3. Robert H. Bishop, "**Learning with Lab-View**" Preticee Hall, 2009
4. Sanjay Gupta, "**Virtual Instrumentation, LABVIEW"**, TMH, New Delhi, 2003
5. Ernest O. Doeblin and Dhanesh N Manik, " **Measrement Systems – Application and Design"**, 5th Edn, TMH, 2007.

VII SEMESTER

COMPUTER COMMUNICATION NETWORKS

Subject Code	: **10EC71**	IA Marks	: 25
No. of Lecture Hrs/Week	: 04	Exam Hours	: 03
Total no. of Lecture Hrs.	: 52	Exam Marks	: 100

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UNIT - 1

Layered tasks, OSI Model, Layers in OSI model, TCP?IP Suite, Addressing, Telephone and cable networks for data transmission, Telephone networks, Dial up modem, DSL, Cable TV for data transmission.

UNIT - 2

DATA LINK CONTROL: Framing, Flow and error control, Protocols, Noiseless channels and noisy channels, HDLC.

UNIT - 3

MULTIPLE ACCESSES: Random access, Controlled access, Channelisation.

UNIT - 4

Wired LAN, Ethernet, IEEE standards, Standard Ethernet. Changes in the standards, Fast Ethernet, Gigabit Ethernet, Wireless LAN IEEE 802.11

UNIT - 5

Connecting LANs, Backbone and Virtual LANs, Connecting devices, Back bone Networks, Virtual LANs

UNIT - 6

Network Layer, Logical addressing, Ipv4 addresses, Ipv6 addresses, Ipv4 and Ipv6 Transition from Ipv4 to Ipv6.

UNIT - 7

Delivery, Forwarding, Unicast Routing Protocols, Multicast Routing protocols

UNIT - 8

Transport layer Process to process Delivery, UDP, TCP, Domain name system, Resolution

TEXT BOOK:

1. **Data Communication and Networking**, B Forouzan, 4th Ed, TMH 2006

REFERENCE BOOKS:

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1. **Computer Networks**, James F. Kurose, Keith W. Ross: Pearson education, 2nd Edition, 2003
2. **Introduction to Data communication and Networking**, Wayne Tomasi: Pearson education 2007

OPTICAL FIBER COMMUNICATION

Subject Code	: **10EC72**	IA Marks	: 25
No. of Lecture Hrs/Week	: 04	Exam Hours	: 03
Total no. of Lecture Hrs.	: 52	Exam Marks	: 100

UNIT - 1

OVERVIEW OF OPTICAL FIBER COMMUNICATION: Introduction, Historical development, general system, advantages, disadvantages, and applications of optical fiber communication, optical fiber waveguides, Ray theory, cylindrical fiber (no derivations in article 2.4.4), single mode fiber, cutoff wave length, mode filed diameter. Optical Fibers: fiber materials, photonic crystal, fiber optic cables specialty fibers.

UNIT - 2

TRANSMISSION CHARACTERISTICS OF OPTICAL FIBERS: Introduction, Attenuation, absorption, scattering losses, bending loss, dispersion, Intra model dispersion, Inter model dispersion.

UNIT - 3

OPTICAL SOURCES AND DETECTORS: Introduction, LED's, LASER diodes, Photo detectors, Photo detector noise, Response time, double hetero junction structure, Photo diodes, comparison of photo detectors.

UNIT - 4

FIBER COUPLERS AND CONNECTORS: Introduction, fiber alignment and joint loss, single mode fiber joints, fiber splices, fiber connectors and fiber couplers.

UNIT - 5

OPTICAL RECEIVER: Introduction, Optical Receiver Operation, receiver sensitivity, quantum limit, eye diagrams, coherent detection, burst mode receiver, operation, Analog receivers

UNIT - 6

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