

### Sciencetech 827DC Computer Networking WorkBench

provides the understanding of all the fundamentals of networking. It helps the users to gain knowledge on all network layers, cable designing and building of complete network of computers. The users can understand and actually implement various topologies using different standards given by IEEE. Actual connections can be made in different topologies and data can be transferred. The users will understand the protocols, topologies e.g. Star, Bus & Ring used in networking, measurement of error rate,

throughput and effect of errors on protocols : CSMA /CD, CSMA /CA, Stop N Wait, Go back to N, Selective repeat, Sliding Window, Token Bus, Token Ring, Packet delay:1000 – 5000 ms, Error generation: Acknowledgment lost, bad packet, Auto Error Generation, Complete analysis of Network & Protocols, Real time, Graphic representation of data on software screen with packet details, Network details like, Indication of computer name, IP address, MAC address, Port number, status of network, Network & protocol analysis like Indication of packet serial number, file name, file size, file number, receiver name, receiver IP address, total packets, packet length, time out, protocol, topology, receiver, MAC address, port number, file send start time, file send completion time, transmission time data rate (Mbps),percentage error. Its provided with the users to observe the various effects and configurations on network along with the graphical representation.



## Features

- Heavy duty WorkBench
- Peer to Peer network, Client - server network
- Design of Star topology using 100Base-Tx, Design of Bus topology using
- 10Base-2, Design of Ring topology using DB9
- Detailed introduction to TCP/IP model (4 Layer Model)
- Socket programming and processing
- Wireless LAN with 803.11b/g
- Network monitoring
- Various LAN Protocols
- Licensed Windows 7/8/9/10 operating System
- Error generation (manual and auto)
- Color coded real time graphical representation of entire transmission & reception
- Graphical Analysis of LAN performance with various parameters and protocols
- Encryption/Decryption technique
- User friendly software
- Easy identification of different parts of computer
- Enhanced electrical safety considerations
- Caster wheel (with locking mechanism) at the legs of WorkBench for easy movement
- MCB provided with AC supply for safety purpose
- UPS and Antivirus
- Learning Software NetSys

## Scope of Learning

### Study of:

- Ping command
- Socket programming
- Identification of different parts of computer like motherboard, SMPS, Hard disk, RAM, CD Drive, Web Cam

### Study and implementation:

- Cable designs in Networking
- PC to PC with IEEE 802.3
- Peer to Peer Network
- Client- Server Network
- Star topology using 100base Tx
- Ethernet LAN protocol to create scenario and Study the performance of CSMA/CD (carrier sense multiple access with collision detection) Protocol through simulation

- Wireless LAN Protocol to create scenario and study the performance network with CSMA/CA protocol and compare with CSAMA/CD protocol
- Go back N and Selective repeat protocols
- Bus topology using 10base2
- To create the scenario and study the performance of token bus protocols through simulation
- Ring topology using DB9
- To create the scenario and study the performance of token ring protocols through simulation
- Distance vector routing algorithm
- Link state routing/Dijkstra's algorithm
- Data Encryption and decryption
- Subnet calculation using software

## Technical Specifications

### Optical Power Meter

Detector	: Silicon detector
Range	: 0 dBm to -60 dBm
Display	: 12 mm LCD
Wavelength	: 660 & 950 nm*
Connector	: SMA
Accuracy	: 0.5 dBm

### Optical Power Source

Transmitter	: Two numbers. Fiber optic LED's
Wavelength	: 660 & 950 nm*
Core type	: Step indexed multimode PMMA plastic cable

### Software window



### Computer Hardware Training System -2 nos.

CPU with fan	: Core i3 Processor with Licensed Windows 7/8/10 OS
Mother board	: With Intel Chipset
Memory (RAM)	: 4GB
Display adaptor card	: Built in mother board
Hard disk	: Above 500 GB (SATA)
Monitor	: 15" TFT colour SVGA
Key board	: Multimedia key board
Mouse	: Scroll mouse (optical)
SMPS	: 450 watts
Drive	: DVD R/W drive (SATA)
Sound cord	: Built in mother board
Speakers & Mike	: Stereo speakers
Video camera	: Web CAM
UPS	: 2 Nos.
Windows Professional OS	: 2 Nos.
Anti Virus	: 2 Nos. (1year)

### LAN Training System-1 no.

#### Hardware:

- PC to PC using RJ-45 Connector
- Star topology using RJ45 Connector
- Bus topology by using end terminator
- Ring topology using DB9 Connector
- Data transmission speed: 10/100 Mbps 4 Nodes

#### Software:

- Star, Bus & Ring selection
- Protocols: CSMA/CD, CSMA/CA, Stop N Wait, Go back to N, Selective repeat, Sliding
- Window, Token Bus, Token Ring
- Packet size: 128, 256, 512, 1024, 2048, 4096, 8192, 16384
- Inter Packet delay: 1000 – 5000 ms
- Error generation: Acknowledgment lost, bad packet, auto error generation
- Complete analysis of Network & Protocols

#### Network & protocol analysis:

Indication of packet serial number, file name, file size, file number, receiver name, receiver IP address, total packets, packet length, time out, protocol, topology, receiver, MAC address, port number, file send start time, file sent completion time, transmission time data rate(Mbps), percentage error.

### Digital Storage Oscilloscope (DSO)-1 no.

Analog Bandwidth	: DC to 50 MHz
Channel	: 04 nos.
Memory	: Minimum 12 Mpoints
Display	: 7 Inch color
Interface	: USB and LAN

### Digital Multimeter (Bench Top)-1 no.

Display	: 4 ½- digit large LCD displays with back light max.
Reading	: 1.9999,
Voltage measurement range:	up to 1000 VDC and 750VAC,DC
AC Current	: up to 20A, ACV
frequency Response	: 50KHz, Frequency,
Included Function	: Resistance, Capacitance measurement, Diode check and Continuity test.

<b>AC Voltmeter</b>	: 1 no.
<b>Voltage</b>	: 10 - 450Vrms
<b>Accuracy</b>	: ± (1% reading + 2 digits)
<b>AC Ammeter</b>	: 1 no.
<b>Current</b>	: 0.2 - 10Arms
<b>Accuracy</b>	: ±(1% reading + 2 digits)
<b>Energy meter</b>	: 1 no.
<b>LED Tubelight</b>	: 1 no.
<b>Dimension in mm</b>	: H1785 x W1775 x D935

#### Included Accessories

RJ45 connector	: 20 nos.
Crimping tool	: 2 nos.
LAN cable tester	: 1 no.
RJ45 – RJ45 connector cable	: 4 nos.
USB dongles	: 2 nos.
DB9 connector cable	: 4 nos.
END terminators	: 2 nos.
Patch cords 16" (2mm)	: 8 nos.
Mike	: 2 nos.
Cat5 cable	: 20 meter
A to B USB cable	: 1 no.
Fiber optic cable (SC-SC)	: 2 nos.
Mouse	: 2 nos.
Key board	: 2 nos.
Head Phone	: 2 nos.
UPS	: 2 Nos.
Windows Professional OS	: 2 Nos.
Anti Virus	: 2 Nos. (1 year)
PMMA Patch Cord with SMA Connector 1/2 Mtr (Make-Telenet)	: 1 No