

11. RESOURCE REQUIREMENTS FOR ELECTRONICS & COMMUNICATION ENGINEERING

11.1 Physical Resources

11.1.1 Space Requirement:

Norms and standards laid down by All India Council for Technical Education (AICTE) may be followed to work out space requirement in respect of class rooms, tutorial rooms, drawing halls, laboratories, space required for faculty, student amenities and residential area for staff and students.

11.1.2 Equipment Requirement:

List of Labs.

1. **Basic Electronics Lab.**
2. **Communication Engineering Lab.**
3. **Industrial Electronics Lab.**
4. **PCB Lab.**
5. **Audio & Video Consumer Electronics Lab.**
6. **Digital Electronics & Micro Processor Lab.**
7. **Advance Communication Lab.**
8. **Microcontroller & Embedded System Lab.**

Note :- The items calculated for the batch of 20 students

1. Basic Electronics Lab.

This Laboratory will cover subjects practical of Basic Electronics (2nd Semester), Electronics Devices and Circuits (3rd Semester).

Sr. No.	Description of Item	Quantity
1.	ANALOG OSCILLOSCOPE:- Oscilloscope 30 MHz Dual Trace	05
2.	POWER SCOPE DC-30 MHz	05
3.	DIGITAL STORAGE OSCILLOSCOPE 50 MHz	05
4.	DIGITAL MULTIMETER 4 & ½ Digits	05
5.	DIGITAL MULTIMETER 3 & ½ Digits	05
6.	FUNCTION GENERATOR 0.3 MHz to 3 MHz	05
7.	LCR-Q Meter	05
8.	DC variable regulated Power Supply (0-30/2A) dual	05
9.	DC regulated Power Supply (30 V/5A)	05
10.	DC regulated Power Supply (30 V/2A, 0 to +/- 15V/1A, 5V/5A)	05
11.	Frequency Counter 0.1 Hz to 1 GHz	05
12.	Pulse Generator 2Hz to 20 MHz	05
13.	Sine Wave Generator 20 Hz to 20 MHz	05
14.	Audio Frequency Oscillator	05

15	Distortion Meter 20 Hz to 20kHz	05
16.	Milli OHM Meter 20mOhm to 20kOhm	05
17.	Universal IC Tester, Digital IC upto 40 pins	05
18.	Soldering / De-soldering Station	05
19.	Soldering Iron	05
20	CRO Probes BNC To BNC, BNC to Crocodile, BNC with 1:10X, 1:100X	05 each
21	Wire Stripper	05
22	Steel Scale	05
23	Screw Driver Set	05
24	Combination Pliers	05
25	Crimping Tools	05
26	Electronic Tool Kit	05
27	Thermo Meter	05
28	ESD Wrist Strep	05
29	ESD Mats for Table	05
30	Vacuum Cleaner	01
31	Twizer	05
32	VARIAC Single Phase	01
33	Battery Charger 12V, 6V, 1.5V	01
34	Servo Voltage Stabilizer for Bench Supply Single Phase 220V/ 5KVA	01
35	Hot Air SMD Rework Station	01
36	Emitter Follower Trainer Board	05
37	Oscillator Trainer Board (Hartley's, Colpitt's and Clapp's)	05
38	Phase Shift Audio Oscillator Trainer Board	05
39	Timer Application IC555 Trainer Board	05
40	Wein Bridge(r-c) Audio Oscillator Trainer Board	05
41	Push-Pull Power Amplifier Trainer Board	05
42	Three Terminal Voltage Regulator Trainer Board	05
43	Study of Diode Clipping Circuits Trainer Board	05
44	Integrating, Differentiating and Clamping Circuits Trainer Board	05
45	Diode & Zener diode Characteristics Trainer Board	05
46	Rectifier and Filter Trainer Board	05
47	Transistors Characteristics Trainer Board (CE,CB,CC)	05
48	FET Characteristics Trainer Board	05
49	Single Stage CE Amplifier Circuits Board	05
50	Analog Lab Base	05

2. Communication Engineering Lab.

This Laboratory will cover subjects practical of PCE (3rd Semester), CS-I (4th Semester), CS-II (5th Semester).

Sr. No.	Description of Item	Quantity
1	Amplitude Modulation and Demodulation trainer board.	05
2	Frequency modulation transmitter kit	05
3	Frequency demodulation received kit	05
4	FDM transmitter /receiver kit	05
5	Reactance Tube Mod/VCO kit for FM modulation and demodulation	05
6	Detector Circuit for AM with Different RC time constant	05
7	FM Detector Kit (FOSTER Scelas and ratio with quantization error measurement)	05
8	Telephone Trainer Kit	05
9	Mobile Communication Training System	05
10	Analog Signal sampling and reconstruction kit	05
11	TDM Pulse code modulation kit	05
12	TDM pulse demodulation kit	05
13	Delta & Adaptive delta modulation /demodulation kit	05
14	PAM/PWM/PPM modulation/demodulation kit	05
15	PCM modulation & demodulation trainer	05
16	3 bit/4bit coded PCM signal to measure quantization noise.	05
17	Communication Simulation Software	01
18	Radio Received Trainer Kit to measure sensitivity, selectivity and fidelity and alignment arrangement	05
19	Directional & Omi-Directional antenna simulator trainer	05
20	Fiber Optics Communication trainer kit	05
21	OFC source, detector & connector assembly units	05
22	Output Power Watt Meter	05
23	Standard AM/FM Signal Generator	05
24	RF Signal Generator	02
25	Spectrum Analyzer	05
26	Data Communication Trainer Kit	05
27	ASK/FSK Modulation/Demodulation Trainer Kit	05
28	Hamming Code Tx /Rx Trainer Kit (Serial Link)	05
29	USART trainer kit (To transmit parallel data on serial link)	05
30	Modem. Trainer	05
31	TDM trainer	05
32	RS 232 interface kit	05
33	Telephone Handset Trainer	05
34	Fax machine trainer	05
35	EPABX trainer kit with handset minimum 56 lines	05
36	Mobile Phone Trainer	05
37	ANALOG OSCILLOSCOPE Oscilloscope 30 MHz Dual Trace	05
38	POWER SCOPE DC-30 MHz	05

39	DIGITAL STORAGE OSCILLOSCOPE 50 MHz	05
40	DIGITAL MULTIMETER 4 & ½ Digits	05
41	DIGITAL MULTIMETER 3 & ½ Digits	05
42	FUNCTION GENERATOR 0.3 MHz to 3 MHz	05
43	LCR-Q Meter	05
44	DC variable regulated Power Supply (0-30/2A) dual	05
45	DC regulated Power Supply (30 V/5A)	05
46	DC regulated Power Supply (30 V/2A, 0 to +/- 15V/1A, 5V/5A)	05
47	Frequency Counter 0.1 Hz to 1 GHz	05
48	Pulse Generator 2Hz to 20 MHz	05
49	Sine Wave Generator 20 Hz to 20 MHz	05
50	Audio Frequency Oscillator	05
51	Distortion Meter 20 Hz to 20kHz	05
52	Milli OHM Meter 20mOhm to 20kOhm	05
53	Universal IC Tester, Digital IC upto 40 pins	05
54	Soldering / Desoldering Station	05
55	Soldering Iron	05
56	CRO Probes BNC To BNC, BNC to Crocodile, BNC with 1:10X, 1:100X	05 each
57	Wire Stripper	05
58	Steel Scale	05
59	Screw Driver Set	05
60	Combination Pliers	05
61	Crimping Tools	05
62	Electronic Tool Kit	05
63	Thermo Meter	05
64	ESD Wrist Strep	05
65	ESD Mats for Table	05
66	Vacuum Cleaner	01
67	Twizer	05
68	VARIAC Single Phase	01
69	Battery Charger 12V, 6V, 1.5V	01
70	Servo Voltage Stabilizer for Bench Supply Single Phase 220V/ 5KVA	01

3. Industrial Electronics Lab.

This Laboratory will cover subjects practical of NFTL (3rd Semester), EIM (4th Semester), Power Electronics (4th Semester).

Sr. No.	Description of Item	Quantity
1	Dual Trace CRO 30 MHz	05
2	UJT&UJT Relaxation oscillator kit	05
3	SCR & Phase Control Trainer Kit	05
4	DV/dt Limitation of SCR kit	05
5	Triac & AC Phase Control Kit	05
6	Universal Motor Speed Control Kit	05
7	Thyristor Application kit	05
8	SCR DC Circuits Breaker kit	05

9	Universal Motor Speed Control with Power Supply	05
10	Diac Trainer kit	05
11	Single Phase Half Wave Control Rectifier Using SCR Board	05
12	Single Phase Full Wave Control Rectifier Using SCR Board	05
13	TRIC Based Lamp intensity & AC Fan Speed Control Trainer Board	05
14	Digital AC / DC Clamp Current Meter	05
15	Low Sensitivity & High Sensitivity Multi meter to study loading effect	05 each
16	Attenuation study kit	05
17	Network Trainer for T & Pi section	05 each
18	Filter experimental kit for prototype, m-derived, crystal and active filters.	05 each
19	Transmission Line Trainer Kit	05
20	Power Electronics Trainer kit	05
21	UPS Trainer	05
22	RF Signal Generator upto 3 GHz	01
23	Bread Board	10
24	Universal Counter	05
25	Logic Probe	05
26	Logic Pulser	05
27	Distortion Factor meter	05
28	Hygrometer Trainer Kit	05
29	Hydro meter	05
30	Temperature Oven (0-200 DegreeC)	05
31	HV Tester (Meggar)	05
32	ANALOG OSCILLOSCOPE: Oscilloscope 30 MHz Dual Trace	05
33	POWER SCOPE DC-30 MHz	05
34	DIGITAL STORAGE OSCILLOSCOPE 50 MHz	05
35	DIGITAL MULTIMETER 4 & ½ Digits	05
36	DIGITAL MULTIMETER 3 & ½ Digits	05
37	FUNCTION GENERATOR 0.3 MHz to 3 MHz	05
38	LCR-Q Meter	05
39	DC variable regulated Power Supply (0-30/2A) dual	05
40	DC regulated Power Supply (30 V/5A)	05
41	DC regulated Power Supply (30 V/2A, 0 to +/- 15V/1A, 5V/5A)	05
42	Frequency Counter 0.1 Hz to 1 GHz	05
43	Pulse Generator 2Hz to 20 MHz	05
44	Sine Wave Generator 20 Hz to 20 MHz	05
45	Audio Frequency Oscillator	05
46	Distortion Meter 20 Hz to 20kHz	05
47	Milli OHM Meter 20mOhm to 20kOhm	05
48	Universal IC Tester, Digital IC upto 40 pins	05
49	Soldering / Desoldering Station	05
50	Soldering Iron	05
51	CRO Probes BNC To BNC, BNC to Crocodile, BNC with 1:10X, 1:100X	05 each
52	Wire Stripper	05
53	Steel Scale	05
54	Screw Driver Set	05
55	Combination Pliers	05

56	Crimping Tools	05
57	Electronic Tool Kit	05
58	Thermo Meter	05
59	ESD Wrist Strep	05
60	ESD Mats for Table	05
61	Vacuum Cleaner	01
62	Tweezer	05
63	VARIAC Single Phase	01
64	Battery Charger 12V, 6V, 1.5V	01
65	Servo Voltage Stabilizer for Bench Supply Single Phase 220V/ 5KVA	01

4. Printed Circuits Board Lab. (PCB CAD LAB.)

This Laboratory will cover subjects practical of Minor Project (4th Semester) & Major Project (6th Semester).

Sr. No.	Description of Item	Quantity
1.	Computers with Pentium P4 range having Window XP loaded	05
2	Circuits Maker Software	02
3	Orcad Software (Two User License)	02
4	Eagle Software for PCB	03
5	Printed Circuits Board (Single /Double Layer) Lab. (Three User License)	01
6	HV Tester (Meggar)	05
7	Crimping Tool	05
8	Tweezer	05
9	Steel Scale	05
10	Power Drill Machine Hand held Type with bits	02
11	Hammer (Ball Point)	05
12	Marking Bit	05

5. Audio & Video Consumer Electronics Lab.

This Laboratory will cover subjects practical of Consumer Electronics (5th Semester) & TSEE (5th Semester).

Sr. No.	Description of Item	Quantity
1	Different Microphones & Loudspeaker (for study of frequency response of microphone)	05 each Type of Microphone & Loudspeaker
2	Microwave Oven	01
3	Colored Television Demonstration kit	05
4	B/W Television Demonstration kit	05
5	CD/DVD Player Trainer Kit	05
6	Auto Washing Machine	01

7	Stereo Cassette player demonstration cum trainer	03
8	Facsimile Machine	02
9	Photostat Machine	02
10	Field Strength Meter	05
11	DB Meter	05
12	Signal Injector	02
13	Signal Tracer	02
14	Pattern Generator	02
15	Amplifiers Audio	05
16	DTH System	02
17	RF Sweep Generator for TV Alignment	05
18	ANALOG OSCILLOSCOPE: Oscilloscope 30 MHz Dual Trace	05
19	POWER SCOPE DC-30 MHz	05
20	DIGITAL STORAGE OSCILLOSCOPE 50 MHz	05
21	DIGITAL MULTIMETER 4 & ½ Digits	05
22	DIGITAL MULTIMETER 3 & ½ Digits	05
23	FUNCTION GENERATOR 0.3 MHz to 3 MHz	05
24	LCR-Q Meter	05
25	DC variable regulated Power Supply (0-30/2A) dual	05
26	DC regulated Power Supply (30 V/5A)	05
27	DC regulated Power Supply (30 V/2A, 0 to +/- 15V/1A, 5V/5A)	05
28	Frequency Counter 0.1 Hz to 1 GHz	05
29	Pulse Generator 2Hz to 20 MHz	05
30	Sine Wave Generator 20 Hz to 20 MHz	05
31	Audio Frequency Oscillator	05
32	Distortion Meter 20 Hz to 20kHz	05
33	Milli OHM Meter 20mOhm to 20kOhm	05
34	Universal IC Tester, Digital IC upto 40 pins	05
35	Soldering / Desoldering Station	05
36	Soldering Iron	05
37	CRO Probes BNC To BNC, BNC to Crocodile, BNC with 1:10X, 1:100X	05 each
38	Wire Stripper	05
39	Steel Scale	05
40	Screw Driver Set	05
41	Combination Pliers	05
42	Crimping Tools	05
43	Electronic Tool Kit	05
44	Thermo Meter	05
45	ESD Wrist Strep	05
46	ESD Mats for Table	05
47	Vacuum Cleaner	01
48	Twizer	05
49	VARIAC Single Phase	01
50	Battery Charger 12V, 6V, 1.5V	01
51	Servo Voltage Stabilizer for Bench Supply Single Phase 220V/ 5KVA	01

6. Digital Electronics & Micro Processor Lab.

This Laboratory will cover subjects practical of Digital Electronics (3rd Semester) & Micro Processor and Interfacing Devices (4th Semester).

Sr. No.	Description of Item	Quantity
1	Digital of ICs trainer Board having provision for ICs (7400),(7402), (7432), (7486), (7408), (7404), (7483), (7485), (74157), (74151), (74138), (7490), (7495).	05
2	EX-ORAND EX-NOR Gates realization kit (Using NAND OR NOR Gates)	05
3	Realization of Truth Table for OR AND NAND Gates using NAND Gates and NOR Gate	05
4	8 bit digital multiplexer	05
5	1:8 line de-multiplexer	05
6	Multiplex two BCD numbers to seven segment display	05
7	Study of Flip Flop or RS, D,J-K & T	05
8	3 bit asynchronous up-counter3 bit synchronous down counter	05
9	Universal Shift Registers having SISO, SIPO, PIPO, PISO	05
10	Study of D-latch & D flip flop trainer	05
11	Encoder/decoder trainer	05
12	Digital IC Testers	02
13	Digital Lab. With modules	05
14	Logic Probe	05
15	Logic Pulser	05
16	Pulse Generator upto (3MHz)	05
17	Digital Frequency Meter	05
18	Digital IC Programmer	05
19	Digital IC Power Supplies (+/- 5V/1A, +/-12V/1A/+15V, 1A)	05
20	8085 Microprocessor Kit	05
21	Interfaced Card for LCD	05
22	Interface Card for Stepper Motor	05
23	Interface Card for LED	05
24	Interface Card for seven segment display	05
25	Interface Card for 8255	05
26	Universal Programmer	02
27	EPROM Programmer	02
28	EPROM Eraser	02
29	ANALOG OSCILLOSCOPE: Oscilloscope 30 MHz Dual Trace	05
30	POWER SCOPE DC-30 MHz	05
31	DIGITAL STORAGE OSCILLOSCOPE 50 MHz	05
32	DIGITAL MULTIMETER 4 & ½ Digits	05
33	DIGITAL MULTIMETER 3 & ½ Digits	05
34	FUNCTION GENERATOR 0.3 MHz to 3 MHz	05
35	LCR-Q Meter	05
36	DC variable regulated Power Supply (0-30/2A) dual	05
37	DC regulated Power Supply (30 V/5A)	05
38	DC regulated Power Supply (30 V/2A, 0 to +/- 15V/1A, 5V/5A)	05
39	Frequency Counter 0.1 Hz to 1 GHz	05

40	Pulse Generator 2Hz to 20 MHz	05
41	Sine Wave Generator 20 Hz to 20 MHz	05
42	Audio Frequency Oscillator	05
43	Distortion Meter 20 Hz to 20kHz	05
44	Milli OHM Meter 20mOhm to 20kOhm	05
45	Universal IC Tester, Digital IC upto 40 pins	05
46	Soldering / Desoldering Station	05
47	Soldering Iron	05
48	CRO Probes BNC To BNC, BNC to Crocodile, BNC with 1:10X, 1:100X	05 each
49	Wire Stripper	05
50	Steel Scale	05
51	Screw Driver Set	05
52	Combination Pliers	05
53	Crimping Tools	05
54	Electronic Tool Kit	05
55	Thermo Meter	05
56	ESD Wrist Strep	05
57	ESD Mats for Table	05
58	Vacuum Cleaner	01
59	Twizer	05
60	VARIAC Single Phase	01
61	Battery Charger 12V, 6V, 1.5V	01
62	Servo Voltage Stabilizer for Bench Supply Single Phase 220V/ 5KVA	01

7. Advance Communication Lab.

This Laboratory will cover subjects practical of Microwave & Radar Engineering (5th Semester) & Wireless and Mobile Communication (6th Semester).

Sr. No.	Description of Item	Quantity
1	Microwave Bench and its components (Sources reflex klystron & Gunn Oscillator)	04
2	TNC Cable	05
3	DTH System	02
4	Cellular Mobile Trainer Kit	05
5	Field Strength Meter (Measurement of Signal of Transmitting Antenna of Cordless Phone & Mobile Phone)	02
6	GSM trainer kit	05
7	CDMA trainer kit	05
8	AM/FM/MSK/PSK/ASK trainer kits	02 each
9	GSM & CDMA mobile phone	05 each
10	ANALOG OSCILLOSCOPE Oscilloscope 30 MHz Dual Trace	05
11	POWER SCOPE DC-30 MHz	05

12	DIGITAL STORAGE OSCILLOSCOPE 50 MHz	05
13	DIGITAL MULTIMETER 4 & ½ Digits	05
14	DIGITAL MULTIMETER 3 & ½ Digits	05
15	FUNCTION GENERATOR 0.3 MHz to 3 MHz	05
16	LCR-Q Meter	05
17	DC variable regulated Power Supply (0-30/2A) dual	05
18	DC regulated Power Supply (30 V/5A)	05
19	DC regulated Power Supply (30 V/2A, 0 to +/- 15V/1A, 5V/5A)	05
20	Frequency Counter 0.1 Hz to 1 GHz	05
21	Pulse Generator 2Hz to 20 MHz	05
22	Sine Wave Generator 20 Hz to 20 MHz	05
23	Audio Frequency Oscillator	05
24	Distortion Meter 20 Hz to 20kHz	05
25	Milli OHM Meter 20mOhm to 20kOhm	05
26	Universal IC Tester, Digital IC upto 40 pins	05
27	Soldering / Desoldering Station	05
28	Soldering Iron	05
29	CRO Probes BNC To BNC, BNC to Crocodile, BNC with 1:10X, 1:100X	05 each
30	Wire Stripper	05
31	Steel Scale	05
32	Screw Driver Set	05
33	Combination Pliers	05
34	Crimping Tools	05
35	Electronic Tool Kit	05
36	Thermo Meter	05
37	ESD Wrist Strep	05
38	ESD Mats for Table	05
39	Vacuum Cleaner	01
40	Twizer	05
41	VARIAC Single Phase	01
42	Battery Charger 12V, 6V, 1.5V	01
43	Servo Voltage Stabilizer for Bench Supply Single Phase 220V/ 5KVA	01

8. Microcontroller & Embedded System Lab.

This Laboratory will cover subjects practical of Micro Controller & Embedded System (5th Semester) & Instrumentation and PLC (6th Semester).

Sr. No.	Description of Item	Quantity
1	Transducer and Instrumentation Combined Trainer Kit	02
2	PLC Training Kit with static application modules & software:- PLC (Allen Bradley / LG / Reputed Make) 12 digital inputs and 8 digital outputs, 24VDC, 2Kstep (EEPROM), 0.4µsec per instruction, RS 232, RS 485 protocol for communication with PC. Supply voltage –110/220VAC.	02

	<p>2 analog inputs and 1 analog output, 0-10VDC/4-20mA jumper settable with 10 bit resolution with Rack mounted panels.</p> <p>Converter cum distribution panel for digital inputs and digital outputs: All digital I/Os are brought out on experiment panel for easy connection.</p> <p>Converter cum distribution panel for analog inputs and outputs: All digital I/Os are brought out on experiment panel for easy connection.</p> <p>Simulation + extension panel for digital inputs, analog inputs and analog outputs. Provided with 4 nos. of switches and 4 nos. of push buttons for digital inputs. 6 nos. of potentiometer for analog inputs and 2 nos. of extension for analog output connection should provide.</p> <p>Simulation + extension panel for digital outputs with status LED indication.</p> <p>Should mounted on replaceable panel in sturdy "Aluminum Rack" with IOs brought out on 4mm banana socket on converter cum distribution panel while simulation cum extension panel provides necessary switches lamps, pots etc.</p> <p>Software Requirement : KGLWIN supports ladder diagram & instruction set</p> <p>Static application modules compatible with above PLC should provide as under :</p> <ol style="list-style-type: none"> 1) Sequential Control of Motors 2) Star Delta Control 3) Door Bell Operation 4) Switching of Lights 5) Silo Control 6) 7 segment display 8) Starter Control 9) Resistance winding 10) Tank Level Control 11) Traffic Light Control 12) Bottling Plant 13) Reaction Vessel 14) Microwave Oven 15) Car parking Garage 16) Combination Lock 17) Elevator Simulator 18) Process Control Trainer 19) Washing Machine 	
3	<p>Microcontroller IDE Software with Compiler, programmer and simulator facility. (Windows Xp Sp2 based.).</p> <p>Such as Keil or Resonance or equivalent should be cable of programming 8051/ 8031 and PIC16F877 microcontroller etc</p>	05
4	<p>Borland Turbo C Software</p> <p>Based on Window Xp SP2</p>	05
5	<p>Microcontroller</p> <p>Assembly programming kit(Assembler based)</p> <p>To program 80C51based assembly having LCD display.</p>	05

6	PC based Microcontroller kits and application modules within built programmer for programming capability.(The kit should be compatible with PC based Microcontroller IDE Software and should have RS232 /USB2.0 interface and necessary driver or IDE software for Window Xp Sp2 based Microcontroller Kits.80C51 provided.) , RS232, 12Mhz Xtl, 9600bps, Ascii Keyboard, LCD display to be provided, printer.	05
7	PC based Microcontroller kits.(Built in Programmer)for PIC16F877 based.4mHz(05 user license)	05
8	Interfacing application module for Microcontroller 80C51 based. 6.1-LCD display Interface Module 6.2 -A/D Converter and LCD based result Module. 6.3 -D/A Converter and LCD based result module. 6.4 -Serial Data Transmission module from Kit to PC. 6.5 -Microcontroller based GSM module. 6.6-Interfacing various sensor module(temp, strain gauze etc)	05 each module
9	Desktop Computer System with Pentium IV or equivalent Processor. (05 user license) -Monitor LCD based. -Speaker and headphone. -2GB DDR 2 Ram(800mhz), expandable up to 4 GB -128MB dedicated Graphic memory. -optical mose,,Multimedia keyboard,320GBSerial ATA II hard drive,USB port four 2.0, Optical drive 16x SuperMulti with lightScribe, Double layer(8.5GB)	05
10	Window Xp SP2 Operating system(05 user license)	05
11	Online UPS system with half hour back up. - 3 KVA with Half hour backup using SMF batteries on full load with cover enclosure for batteries. - 20Khz PWM IGBT - Low noise level - Compact size	01
12	Computer Printer OfficeJet type. Duty cycle 5000 sides of pages Paper A4 210x297 mm A5 148x210mm B5 182x257mm Capacity : 250 sheets	01
13	ANALOG OSCILLOSCOPE Oscilloscope 30 MHz Dual Trace	05
14	POWER SCOPE DC-30 MHz	05
15	DIGITAL STORAGE OSCILLOSCOPE 50 MHz	05
16	DIGITAL MULTIMETER 4 & ½ Digits	05
17	DIGITAL MULTIMETER 3 & ½ Digits	05
18	FUNCTION GENERATOR 0.3 MHz to 3 MHz	05
19	LCR-Q Meter	05

20	DC variable regulated Power Supply (0-30/2A) dual	05
21	DC regulated Power Supply (30 V/5A)	05
22	DC regulated Power Supply (30 V/2A, 0 to +/- 15V/1A, 5V/5A)	05
23	Frequency Counter 0.1 Hz to 1 GHz	05
24	Pulse Generator 2Hz to 20 MHz	05
25	Sine Wave Generator 20 Hz to 20 MHz	05
26	Audio Frequency Oscillator	05
27	Distortion Meter 20 Hz to 20kHz	05
28	Milli OHM Meter 20mOhm to 20kOhm	05
29	Universal IC Tester, Digital IC upto 40 pins	05
30	Soldering / Desoldering Station	05
31	Soldering Iron	05
32	CRO Probes BNC To BNC, BNC to Crocodile, BNC with 1:10X, 1:100X	05 each
33	Wire Stripper	05
34	Steel Scale	05
35	Screw Driver Set	05
36	Combination Pliers	05
37	Crimping Tools	05
38	Electronic Tool Kit	05
39	Thermo Meter	05
40	ESD Wrist Strep	05
41	ESD Mats for Table	05
42	Vacuum Cleaner	01
43	Twizer	05
44	VARIAC Single Phase	01
45	Battery Charger 12V, 6V, 1.5V	01
46	Servo Voltage Stabilizer for Bench Supply Single Phase 220V/ 5KVA	01