MECHANIC CONSUMER ELECTRONIC APPLIANCES
TRAINEES TOOL KIT FOR 20 TRAINEES +1 INSTRUCTOR

Sl No.	Names of the Items
1	Connecting screwdriver 100 mm
2	Neon tester 500 V.
3	Screw driver set (set of 5)
4	Insulated combination pliers 150 mm
5	Insulated side cutting pliers 150 mm
6	Long nose pliers 150 mm
7	Soldering iron 25 W. 240 V.
8	Electrician knife
9	Tweezers 100mm
10	Digital Multimeter (3 ½ digit) **Technical Specifications:** DC Voltage range:200mV, 2V, 20V, 200V, 1000V Accuracy :+(0.5% + 3 Digit) DC Current range: 20microA, 2mA, 200mA, 20A Accuracy :+(1.5% + 3 Digit) AC Voltage range: 2V, 20V, 200V , 750V Accuracy :+ (0.8% + 5 Digit) AC Current range:2mA, 200mA, 20A Accuracy :+(1.5% + 3 Digit) Resistance range:200ohm, 2Kohm, 20Kohm, 200Kohm, 2Mohm, 20Mohm Accuracy :+ (0.8% + 3 Digit) Capacitance range:20nF, 200nF, 20microF, 200microF Accuracy :+ (2.5% + 20 Digit) Temperature :- 40OC ~ 1000OC Accuracy :+ (0.8% + 4 Digit) Input impedance:10Mohm Sampling Rate:3s AC Frequency Response:40 ~ 400Hz Power requirement : Battery 9V (Included) **Standard Accessories :** Probes, Batteries, Instruction manual
11	Soldering Iron Changeable bits 10 W
12	De- soldering pump
Sl.No	**Name of the items**
1	Steel rule 300mm
2	Steel measuring tape-3 m
3	Tools makers vice 100mm (clamp)
4	Tools maker vice 50mm (clamp)
5	Crimping tool (pliers)
6	Magneto spanner set
7	File flat 200mm bastard
8	File flat 200mm second cut
9	File flat 200mm smooth
10	100mm flat pliers
11	100mm round Nose pliers
12	Scriber straight 150mm
13	Hammer ball pen 0.5Kg
14	Allen key set (set of 9)
15	Tubular box spanner (set of 6Nos)
16	Magnifying lenses 75mm
17	Continuity tester
18	Hacksaw frame adjustable
19	Cold chisel 20mm
20	Scissors 200mm

21	Handsaw 450mm
22	Hand Drill Machine
23	First aid kit
24	Fire Extinguisher
25	Bench Vice
26	Dual DC regulated power supply 30-0-30 V, 2 Amps **Technical Specifications:** Variable Output Dual Output Voltage : 0 ~ +30VDC Dual Output Current : 0 ~ 2A Fixed Output : 5VDC/2A Stability : 0 to nominal value continuously variable : Voltage: <0.01% +2mV : Load: < 0.01% +2mV Recovery Time : < 100ms Ripple & Noise : < 1mV rms (efficient value) Temperature Factor : < 300 PPM / oC 0 to nominal value Continuously Current Load Stability : < 0.2% +3mA Source Regulation : < 0.05% +10mV Load Regulation : < 0.05% +10mV Digital Display : 3 Digit voltage & current display Accuracy : +1%, +1 Digit Mode : Independent, Series and Parallel modes Power requirement : 220 VAC +10% , 50 Hz Weight : 8.0Kg Approx. Dimensions (mm) : 240(L) x 250(B) x 150(H) Standard Accessories : Power cable, Instruction manual
27	DC regulated variable power supply 0-24 V, 1Amp **Technical Specifications:** Variable Output Output Voltage : 0 ~ 24VDC Output Current : 0 ~ 1A Source Regulation : < 0.05% +10mV Load Regulation : < 0.05% +10mV Ripple & Noise : <1mV (rms) Digital Display : 3 digit voltage & current display
28	LCR meter (Digital) **Technical Specifications :** R: 0.0001ohm - 99.99 Mohm , C : 0.01 pF -19999microF, L :0.01 microH - 9999H D: 0.0001 - 9.999, Q: 0.01 - 9999 Measuring parameters : L-Q , C-D , R-Q Test frequency : 100 Hz , 1 kHz , 10 kHz Level : 0.3Vrms Accuracy : 0.25% Display range : R, 0.0001ohm -99.99 Mohm : C, 0.01 pF -19999 microF : L, 0.01microH -9999 H : D, 0.0001 - 9.999 : Q, 0.01 - 9999 Sampling rate : 5 times/sec. Equivalent circuit : Series, Parallel Test Mode : Auto, Hold Calibration : Open circuit, Short circuit and ZeroingTest Ports

	5 terminals Display mode : Direct readout Power requirement : 220 VAC +10% , 50 Hz Weight : 3.0Kg Approx. Dimensions (mm) : 360(L) x 340(B) x 120(H) **Standard Accessories :** Power cable, Instruction manual
29	CRO Dual Trace 20 MHz (component testing facilities) Features : DC ~ 20MHz With component tester Dual channel/Dual tracing, X-Y mode 6" display cathode ray tube, sensitivity triggering up to 1mV/divison TV synchronous separation circuit to observe stable TV signal Hold-Off function Technical Specifications : CRT : 6” Rectangular screen with internal graticule, 8 x 10 Div (1Div=1cm) Vertical Deflection Vertical Operation Mode : CH1, CH2, ADD, ALT, CHOP,CH2 INV Sensitivity : 5mV/div to 20V/div +3%, 1mV/div to 4V/div +5% (x5),12 steps Rise time : <17.5ns <50ns Input impedance : 1Mohm +3% / 25pF +5pF Max. Input voltage : 400V (DC+AC p-p) at 1kHz Input coupling : AC, DC, GND Horizontal Deflection Sweep time : 0.2micro s to 0.5s/div +3% Sweep expansion : x10 Max. Sweep time :20ns/Div Trigger System Triggering mode : Auto, NORM, TV-V, TV-H, Lever lock Trigger source : VERT,CH1, CH2, LINE, ALT Trigger coupling : AC Trigger slop : “+” or “-” Trigger sensitivity : 5Hz ~ 10MHz 10MHz ~ 20MHz CH1, CH2 - 1Div 1.5Div ALT - 2.0Div 3.0Div Ext - 200mV 300mV TV sync pulse >2Div or 0.5V (Ext) External Trigger : Input impedance - 1Mohm+3%, 25pF+5pF Max. Input voltage - 400V(DC+AC peak)at1kHz X-Y Phase Difference : <3O, DC-50kHz Calibration waveform : 1kHz square wave, 2Vp-p +2% Power requirement : 220 VAC +10% , 50 Hz Weight : 8.0Kg Approx. Dimensions (mm) : 310 (L) x440(B) x 145(H) Standard Accessories : Power cable, Probe - 2Nos., Instruction manual
30	Signal Generator, 0-100 KHz **TECHNICAL SPECIFICATIONS:** **Display :** LCD type displaying setted frequency & type of waveform selected. Frequency Counter : Int / Ext (up to 20Mhz)

	FREQUENCY RANGE : 1Hz - 200KHz in six steps. **WAVES :** SINE / SQUARE / TRIANGULAR selectable using "WAVEFORM" selector bandswitch. **AMPLITUDE :** 0 - 20V peak to peak(approx.) **ACCURACY :** + 3% on all ranges. **OUTPUT IMPEDANCE :** 60 Ohms (Approx.)
31	Battery Charger 0-12V /2 Amp
32	Analog multimeter **Technical Specifications :** DC Voltage range : 0.1, 0.5, 2.5, 10, 50, 250, 1000V Accuracy at FSD : 4% Sensitivity : 20Kohm / V DC Current range : 50microA(at 0.1VDC position),2.5~25mA, 0.25A Accuracy at FSD : +3% Volt drop : 250mV AC Voltage range : 10, 50, 250, 1000V Accuracy at FSD : 5% Sensitivity : 9Kohm / V Decibel meter : -10 ~ +50dB, 0dB = 1mw/600 Resistance range : X1~0.2ohm up to 2Kohm, Mid scale at 20ohm : X10~2ohm up to 20Kohm, Mid scale at 200ohm : X1K~200ohm up to 2Mohm, Mid scale at 20Kohm : X1K~2Kohm up to 20Mohm, Mid scale at 200Kohm ICEO (leakage current test) : 150microA, 15mA, 150mA hFE (DC amplification) : 0-1000 Power requirement : Battery AA, 1.5V x 2nos. &9V (Included) Weight : 300g Approx. **Standard Accessories :** Probes, Batteries, Instruction manual
33	Function generator (Triangular, square and sine wave) **Technical Specifications :** Frequency range : 2Hz ~ 2MHz Digital Output waveform : Sine, Triangle, Square, Pulse, Ramp Output impedance : 50ohms + 10% Amplitude : >20Vp-p (1Mohm Load) : >10Vp-p (50ohm Load) DC offset : 0~+10V (1Mohm Load) : 0~+5V (50ohm Load) Symmetry range : 10% ~ 90% Output attenuation : 20dB, 40dB, 60dB Sine wave distortion : 20Hz ~ 20kHz<1 % Frequency response : 2Hz ~ 2MHz < +1dB Square wave rise or fall time : <30ns TTL output : <50ns Low level : <0.4V High level : >3.5V Impedance : 100ohm VCF Input Input voltage : -5V~0V Input impedance : 10kohm +10% 50Hz Output : 2Vp-p, main synchrony **Frequency Counter**

	Display : 6 Digit Measuring range : 2Hz ~ 30MHz Input impedance : 10kohm +10% Sensitivity : 200mV rms Accuracy : 0.1Hz / 1Hz Error : <0.1%+1digit Max. Input voltage : 50Vp-p Power requirement : 220 VAC +10% , 50 Hz Weight : 3.0Kg Approx. Dimensions (mm) : 250(L) x 275(B) x 100(H) **Standard Accessories :** Power cable, BNC to Crocodile Clip Probes - 1No & BNC to BNC Probe - 1No., Instruction manual
	Or ELECTRONIC WORK BENCH **Features :** All devices (Instruments, Power Supplies, etc) are integrated in the device panel with modular construction Workbench have painted frame and device panel made of laminated board All fitting supplied with uniform color scheme Lockable wheels are provided on all four legs Technical Specifications : Oscilloscope : 20MHz Analog Oscilloscope Dual Trace - 1no Function Generator:Function Generator - 1no DC Power Supply :0 ~ +30V/2A Single Output - 1no Multimeter :3.5 Digit Digital Multimeter - 1no Multimeter :Analog Multimeter - 1no Soldering Station :Soldering Station - 1no Dimer stat :0-270V / 2 Amp - 1 No. Components Tray :1 No Power Switches:2 nos (220VAC) Overload Protection: MCB provided Pull out drawer with Lock :2 nos Writing Pad Desk :1no Power requirement: 220 VAC +10% , 50 Hz Standard Accessories : Power cable, Probes, Instruction manual
	Instead of sr no's (26,27,29,31,34)
34	Dimmer state, 3 Amps Technical Specifications: s Variable Auto Transformer 0-270VAC s Input Single Phase 230V s Output Voltage 0-270VAC s Output Current 3 Amps
35	Analog Component Trainer **Technical Specification :** DC REGULATED POWER SUPPLIES Output Voltages : Two Variable DC Regulated Power Supply of 0-3V & 0-30V/250mA. :One fixed DC Regulated Power Supply of +5V/250mA. :Two fixed DC Regulated Power Supply of +15V/250mA. AC SUPPLY : Output Voltage:10 - 0 - 10V/500mA DPM (DIGITAL PANEL METER) : 01No. of Voltmeter 20VDC & 01No. of Current Meter 2AMP.DC

	Power requirement : 230V ac +10%, 50Hz List of Experiments : PN Junction Diode V-I Characteristics Zener Diode V-I Characteristics Voltage Stabilization of Zener Diode LED Characteristics Resistance in Series & Parallel LCR Resonance Circuit Clipping & Clamping Half Wave, Full Wave & Bridge Rectifier Common Base Transistor Amplifier Common Emitter Transistor Amplifier Common Collector Transistor Amplifier Basic Logic Gates RC Passive Filter Circuits Operational amplifier as Inverting Amplifier. Operational amplifier as Non-Inverting Amplifier. Operational amplifier as Differentiator. Operational amplifier as Square to Triangular Wave Convertor. Operational amplifier as Unity Gain Amplifier.
36	Op Amp trainer Technical Specifications : Inbuilt Fixed DC Regulated Power Supplies Output Voltages : 0-5VDC (2Nos.) : +12VDC IC's, Transistor & Components Provided IC : 741 Transistor : CL 100 (NPN) Resistances Capacitors High quality Aluminum used as front panel of 270 mm x 170mm & mounted on light weight shock proof plastic cabinet Circuit diagram printed on Aluminum Front Panel & all important test Points are brought out on front panel Power requirement : 230 VAC 10%, 50Hz. Weight : 1.0Kg Approx. Dimensions (mm) : 300(L) x 175(B) x 75(H) Standard Accessories : Power chord, Patch chords & Instruction manual.
37	Digital IC Trainer **Technical Specification:** Fixed output DC Regulated Power supply of 5V/0.5Amp for the complete instrument. Ten Green led Logic inputs logic '0' & logic '1' selectable using SPDT switches are provided on the L.H.S.of front panel. Ten Red led output indicators are also provided on the R.H.S of front panel. 1 Hz monoshot clock pulse output with pulser switch provided on the front panel near "ON-OFF" power indicator. Four NAND Gates(IC 7400), Four NOR Gates(IC 7402), Two AND Gates(IC 7408), Two NOT Gates(IC 7404)- with input & output on sockets are provided on the front panel. One RS & D Flip Flop (IC 7400 & IC 7410) are provided inside the front panel & important connections are brought out on sockets. Four Bit Counter using IC 7493 provided inside the front panel & important connections are brought out on sockets. 4:1 Multiplexer using IC 74153 placed inside the front panel and important connections are brought out on sockets. 1:4 De-multiplexer using IC 74139 placed inside the front panel and important connections are brought out on sockets.

	Shift Register using IC 74194 placed inside the front panel and important connections are brought out on sockets. Power requirement: 220V ac +10%, 50Hz
38	Digital IC Tester **Features :** Tests most of the 6 to 40 pin ICs in DIP package as per give in Test Library Automatic testing of variety of Ics Potential free 40 pin universal ZIF socket Six Seven Segment/16x2 LCD Display It has 16/12 keys for its operation Audio alarm to user whenever it is required Power requirement: 220 VAC +10% , 50 Hz Weight : 1.0Kg Approx.
39	Digital and Analog Bread Board Trainer **Technical Specification:** Size of Breadboard : 172.5mm x 128.5mm Connection on Breadboard :1685 DC Power Supplies : +5V/1A (Fixed), +15V/500mA (Fixed),-15V/500mA (Fixed), Two variable Power Supplies of 0-5V AC Supply : 12V-0-12V,9V-0-9V can be used as 9V,12V,18V,27V & also as center tap. Sine Wave Generator : Frequency Range 100Hz to 100KHz in 3 Coarse :Steps(X100, X1K, X10K) & FINE Control knob. Variable in Between steps. Output : Sine Wave with variable amplitude output with set amplitude Potentiometer. Logic Input : 8 Nos. Logic Indicator : 8 Nos (LED) Power Requirement : 220Vac ±10%, 50Hz.
40	Rheostats various values and ratings
41	POWER ELECTRONICS TRAINER with at least 6 no's of onboard applications **Objectives:-** To study dc fan speed control using PWM & MOSFET. To study light intensity control using PWM & IGBT. To study ac fan speed control using TRIAC & DIAC. To study Temperature control using comparator & BJT. To study light intensity control using SCR & DIAC. To study Light activated solid switch TRIAC, DIAC & LDR **Technical Specification:** Inbuilt power supplies: +12Vdc. Inbuilt signal conditioning circuits as per Thyristors. Oven provided on front panel. Dc fan (12V dc operated) provided on front panel. 4mm shrouded sockets provided for interconnection. 220V AC power supply input with ' ON/OFF ' switch to drive circuit on front panel . Circuits for different experiments are printed separately in blocks on front panel. Bakelite front panel for isolation. Two pin socket provided on front panel to connect load. 220V dc power supply input with' ON/OFF' switch to drive IGBT Circuit provided on front panel. Complete circuit diagram in different blocks. Power requirement: 220V ac +10%, 50Hz.
42	Computers in the assembled form (including cabinet, motherboards, HDD, DVD, SMPS, Monitor, KB, Mouse, LAN card, Blu-Ray drive and player), MS Office education version.
43	Laptops latest configuration
44	Laser jet Printer
45	INTERNET BROADBAND CONNECTION

46	Electronic circuit simulation software with 6 user licenses
	SPECIFICATIONS
	  More than 25,000 analog, digital and mixed-signal parts including realistic behavioral models for resistors, inductors and capacitors
	  A large selection of active device models (diode, BJTs, FETs, MOSFETs, MESFETS, operational amplifiers, etc.) with no less than six distinct MOSFET models including BSIM3 and BSIM4
	  A large number of “black box” virtual blocks performing signal processing and conditioning functions such as summer, multiplier, divider, limiter, differentiation, integrator, etc.
	  One-click generation of Net list file from any schematic
	
	APPLICATIONS
	  Equipped with the Berkeley Spice 3F5 and Georgia Tech XSpice simulation engines, B2.Spice A/D can analyze a large variety of analog, digital, and mixed-mode circuits in both time and frequency domains including nonlinear devices and complex waveforms.
	  Many powerful analysis/test types : Transient, DC bias, AC Sweep, Sensitivity analysis, Distortion, Noise, Network analysis, etc.
	  Event-driven digital simulations with manual stepping and continuous clocking

47	Different types of electronic and electrical cables, connectors, sockets, terminations.
48	Different types of Analog electronic components, digital ICs, power electronic components, general purpose PCBs, bread board, MCB, ELCB
49	Crimping tools as necessary for performing terminations mentioned week no 17-21 of SEMSTER-1
Sl.No	**Name of the items**
1	Instructor’s table
2	Instructor’s chair
3	Metal Rack, 100cm x 150cm x 45cm
4	Lockers with 16 drawers standard size
5	Steel Almirah, 2.5 m x 1.20 m x 0.5 m
6	Black board/white board
1	DSO (colour) **Features:** ·Slim design, compact and easy to carry ·500M Sa/s real time sampling rate 50G Sa/s equivalent sampling rate ·Bandwidth:25MHz ·TFT-LCD 8×18 div color display ·3 kinds of cursor modes,32 kinds of automation measurements ·Trigger types:Edge,Pulse,Video,Slope,Alternative ·6 digits hardware frequency counter, real time counting display ·Pop-up menu,friendly design ·2 groups of reference waveform 20 groups of setting 10 groups of waveform ·Independent channel control ·Standard interfaces USB Host support USB storage and FW upgrade USB Device support remote control and PictBridge print RS232 and Pass/Fail
2	Soldering & De soldering Station **Technical Specifications :** Main Unit Power consumption : 60W + 80W

	Main fuse : 3Amp Function display : LCD Soldering Section: Voltage : 24V AC Power : 60W heat up rating 130W Temperature : 160OC - 480OC Heating element : Ceramic Heater Desoldering Section: Voltage : 24V AC Vaccum pressure : 600mm Hg Power : 80W Temperature : 160OC - 480OC Power requirement : 220 VAC +10% , 50 Hz Weight : 6.0Kg Approx. Dimensions (mm) : 220(L) x 225(B) x 160(H) **Standard Accessories :** Power cable, Soldering iron, Desoldring gun, Instruction manual
3	SMD Soldering & De soldering Station with necessary accessories
4	DOL starter
5	AC motor ¼ HP
6	**OR** **ELECTRICAL TRAINER FITTED WITH RESOURCES MENTIONED AT SL NO (DOL starter, contactors, relays, MCB, Motor suitable for electrical control circuit exercises)**
7	Frequency modulator and Demodulator trainer kit Technical Specifications : In built IC based DC regulated power supply +12V/ 250mA On board sine wave audio frequency signal generator Frequency: 2 KHz & 4KHz Amplitude: 0-2.8Vpp Approx. Modulation using VCO 8038 (Carrier generator internally 62KHz, 5.5Vpp) Demodulation circuit using phase locked loop IC LM 565 Glass Epoxy PCB used as front panel of 270mm x 170mm & mounted on light Weight shock proof plastic cabinet Circuit diagram printed on Glass Epoxy PCB & all important IC's& test points are brought out on front panel Power requirement: 220 VAC +10%, 50Hz Weight : 1.0Kg Approx. Dimensions (mm): 300(L) x 175(B) x 75(H) Standard Accessories : Power Chord, Patch Chords & Instruction Manual
8	PAM, PPM,PWM trainer kit Technical Specifications : In built IC based DC regulated power supply +12V, + 5V/ 300mA On board sine wave audio frequency signal generator Frequency : 1 KHz & 2KHz Amplitude : 0-10Vpp & 0-4Vpp Approx. On board square wave signal generator Frequency :1 KHz & 2KHz Amplitude : 5Vpp Approx. On board sampling pulse generator Frequency : 8KHz,16KHz, 32KHz, 64KHz Amplitude : 5Vpp Approx. Demodulation of PAM/PPM/PWM using 4th order / low pass filter & AC amplifier using TL 074 with adjustable gain control Voice Communication: Voice Link using dynamic Mic& Speaker DC Output : 0-4V (Variable)

	8 Nos. Fault Switches & 29 Test Points Glass Epoxy PCB used as front panel of 400mm x 225mm & mounted on shock proof cabinet Circuit diagram printed on Glass Epoxy PCB & all important IC's& test points are brought out on front panel Power requirement : 220 VAC +10%, 50Hz Weight : 4.5Kg Approx. Standard Accessories : Power Chords, Patch Chords, Sensitive MIC, Ear Phone & Instruction Manual
10	AM/FM Commercial radio receivers Technical Specifications : In built IC based DC regulated power supply+6V/250mA Receiver Principal :Superheterodyne, Frequency Range :525KHz to 1625KHz Intermediate Frequency: 455KHz One speaker of coil impedance : 4W 12 Test points provided on front panel only for observations 15 Fault switch provided on front panel for fault creation Glass Epoxy PCB used as front panel of 300mm x220mm & mounted on light weight shock proof plastic cabinet Circuit diagram printed on Glass Epoxy PCB & all important components & test points brought out on front panel. Power requirement: 220 VAC +10% , 50 Hz Weight : 2.0Kg Approx. Dimensions (mm) : 330 (L) x225(B) x 75(H) Standard Accessories : Power Chord, Patch Chords, & Instruction manual
11	Microcontroller kits (8051) along with programming software (Assembly level Programming) Technical Specifications : CPU : 8031/8051/89C51 Memory : Total on board capacity of 128K bytes RAM : 32K bytes and space for further expansion ROM : 32K bytes of EPROM loaded with powerful program Timer : 16bit programmable timer/counter using 8253 I/O : 48 I/O lines using 8255 PPI Keyboard : 10 keys for command 16 key for hexadecimal data entry 1 key for vector interrupt & 1key for reset LED Display : 6 seven segment display (4 for address field& 2 for datafield) Bus : All data, address and control signals (TTL compatible available at FRC connector) Interface : RS-232-C through 8251 Power requirement: 220 VAC +10%, 50Hz Standard Accessories : Power Chord & Instruction Manual
12	Application kits for Microcontrollers 6 different applications
13	Sensor trainer kit (containing Various sensors like Thermocouple, RTD, Thermocouple, load cell, strain gauge, LVDT, smoke sensors, speed sensor) Objectives:- To study working principle of different types of Sensors (transducers). To study practical & Theoretical Aspects of different types Sensors (transducers). To study signal output & signal conditioning circuitry different types Sensors (transducers). Technical Specifications :

	DC Regulated Power Supplies +5VDC(fix) for LVDT, +5VDC(fix) for Thermocouple, +5VDC(fix) for RTD, +5VDC(fix) for Strain Gauge & Load Cell, +5VDC(fix) & 0-12VDC(variable) for Speed Sensor circuit & +9VDC(fix) & +5VDC(fix) for Smoke Sensor Circuit +5VDC(fix) for all DPMs. Separate mechanism for LVDT (LVDT Jig) with 5 pin connector, is provided, to be connected at "LVDT INPUT" connector provided in its signal conditioning circuit. Separate speed sensor, is provided, to be connected at "SPEED SENSOR INPUT" connector provided in "SPEED SENSOR "circuit. Separate smoke sensor, is provided, to be connected at "SMOKE SENSOR INPUT" connector provided in "SMOKE SENSOR ALARM" circuit. Separate Load Cell & Strain Gauge sensors, are provided, to be connected at "A,B,C & D" sockets provided in its circuit. Separate Thermocouple sensor (K-type) & RTD(PT-100) sensor along with their associated accessories, are provided, to be connected at "THERMOCOUPLE INPUT" & at "RTD INPUT" sockets respectively provided in their signal conditioning circuits. Three nos. of Digital Panel Meter (DPMs) are provided on front panel in their respective circuits for observing direct output of the respective experiments. One DPM fitted separately (provided with INPUT sockets "+" & "-") at top right corner can be used both for Thermocouple & RTD experiment with the help of "THERMOCOUPLE RTD" toggle switch. Circuit diagrams for different experiments are printed on front PCB panel & important Test Points (TPs) are extended to the front panel. Glass Epoxy PCB used as front panel of 458mm x 458mm & mounted on shock proof wooden box. Power requirement: 220V ac +10%, 50Hz
14	Various analog and digital ICs useful for doing project works mentioned in the digital and analog IC applications modules
15	Different types of electronic and electrical cables, connectors, sockets, terminations.
16	Discrete computer system components such as HDD, DVD, memory modules, SMPS, cables
17	Crimping tools as necessary for performing terminations mentioned in the exercises of week no's 1 and 2
1	**Fibre optic communication trainer** **Technical Specifications :** In built IC based Fixed DC regulated power supply +6VDC & 3VDC Pre amplifier stages consists of MIC (Microphone), Photodetector, Transistors (548) and biasing network of Resistance and Capacitors Power amplifier stages consists of impedance matching transformers (Driver Transformers), Transistors (8550) & biasing network of Resistance and Capacitors Output section having LEDs and speaker, Fiber optic cable for transmission ofSignal Circuit diagram printed on Glass Epoxy PCB & different combination of Resistance & test points are brought out on front panel Glass Epoxy PCB used as front panel of 300mm x 220mm & mounted on light weight shock proof plastic cabinet Power requirement: 220 VAC +10% , 50 Hz Weight : 3.0Kg Approx. Dimensions (mm) : 330 (L) x225(B) x 75(H) Standard Accessories :

	Optical Fiber Cable 2Nos.(1mtr & 10mts Long with Connectors), Mic& Speaker, Wooden assembly to hold Fiber Cable, Graph Paper, Power Chord, Patch Chords & Instruction Manual
2	SMPS trainer Technical Specifications • Rotary switch for selections of different input voltage & linearity coil for AC filtrations • Bridge rectifier to convert AC into DC • DC filtrations circuit is given to filter the impurities i.e. AC components. • High frequency transformer and high frequency transistor (BU 508) for switching action. • Feed back/ comparator circuit to maintain output voltage constant i.e. +10 % on load. • Two meters are provided on the front panel to measure the DC voltage & current. • Two bulb holder are mounted on the front panel to connect resistive (Bulb) load across the output. • Block diagram printed on front panel & test points brought out on front panel. • Power requirement: 230 VAC +10%, 50Hz. Standard Accessories Patch Chords & Instruction Manual.
3	SMPS of different make
4	UPS trainer Technical Specifications : On board controller PCB On board input/output transformer & chargeable battery Digital panel meter for current reading 5 Test points provided on front panel only for observations 5 Fault switch provided on front panel for fault creation LED Indicators for status mode Power Requirement: 220VAC+10%,50Hz Standard Accessories : Power Chord & Instruction Manual
5	UPS 3 KVA
6	Precision set of screw drivers- T5, T6, T7
7	LCD TV Trainer kit Technical Specification : Aspect Ratio : 4:3/16:9/Zoom1/Zoom2 Input Signals : PAL-B/G,I,D/K Color System : PAL/NTSC/SECAM Sound System : BG/DK/MN/I Receiving Channel : 1-199 Signal Input/output : PC(VGA) Input : High-Definition Multimedia Interface(HDMI) : AV Input : PC AUDIO INPUT : Earphone Output : USB(FAT or FAT 32) : RF IN Screen Size : 49cm Supported Multimedia

	File : JPEG,BMP,PNG for Images, : MP3,WMA for Music, : MPEG-1(.DAT/.MPG), : MPEG-2(.MPG/.VOB), : MPEG-4(.AVI/ .Mp4), : Digital Movies for Video, : .txt for TXT 5 Nos. of fault switch provided on front panel for fault creation 5 Nos. of Test Points provided on front panel for only for observations Complete block diagram printed on front panel. Remote operated system. Power requirement : 220V ac +10%, 50Hz
8	LED TV Trainer kit Technical Specifications : Display Resolution : 1440 X 900 Aspect Ratio : 16 : 9 Screen Size : 49cm Viewing Angle : H/178° V/170° Brightness : 500cd/m2 Response Time : 5ms Display Colour : 16.7M USB : Universal Serial Bus 2.0 Input Color System : PAL/NTSC/SECAM Sound System : BG/DK/I Receiving Channel : 1-199 Signal Input/output : PC(VGA) : High-Definition Multimedia Interface(HDMI) : Video Input : Video Output : PC Audio Input : YCb (Pb) Cr (Pr) Audio IN : Earphone : USB RF IN Wide Full HD : 1080P 6Nos.of fault switch provided on front panel for fault creation 5 Nos. of Test Points provided on front panel for only for observations Complete block diagram printed on front panel. Remote operated system. Power requirement : 220V ac +10%, 50Hz
9	LCD and LED TV
10	Allen key screw driver
11	Regulated power supply variable for cell phone repair
12	CCTV set up
13	Washing machine (auto and semi automatic)
14	Vacuum cleaner
15	Microwave oven 20 liters (two technologies)
16	Mixer cum grinder

17	Steam iron
18	Electric rice cooker
19	Water purifier(RO and UV technologies)
20	Immersion Heater
21	Induction cooktop
22	Home theatre system
23	Printers (DMP, laser)
24	LCD / LED Projector
25	DTH with accessories
26	SAT meter
27	Co- Axial cable cutter Jacket stripper/ Coring tool for 500 series cable
28	Centre conductor cleaner
29	Universal drop trimmer for RG 6/11 cables
30	F - connector tool for RG 6/11 cables
31	F – connector compression tool for RG 6/11 cables