

Name of the Trade		Mechanic Consumer Electronics Appliances		
S.No.	Name of the item	Std List No.	Type of the item (Tool / Equipment / Machinery)	Specifications ¶
(i)	(ii)	(iii)	(iv)	(v)
1	Connecting screwdriver 100 mm	1	T.Tool Kit	Connecting screwdriver 100 mm slim insulated with plastic handle 3mm tip.
2	Neon tester 500 V.	2	T.Tool Kit	A good quality CRYSTAL HANDLED 3 X 150mm slotted test pen screwdriver having capability of energizing the neon lamp when powered up and capable of testing voltage range upto 500 V AC
3	Screw driver set (set of 5)	3	T.Tool Kit	Standard Screw Driver Set of 5 pieces having length 100 mm ,150 mm,200 mm,250 mm and 300 mm respectively with non slip handle.
4	Insulated combination pliers 150 mm	4	T.Tool Kit	Standard Quality Combination Plier having Length of 150 mm and properly insulated with good quality insulating material
5	Insulated side cutting pliers 150 mm	5	T.Tool Kit	Standard Quality Side Cutting Plier having Length of 150 mm and properly insulated with good quality insulating material
6	Long nose pliers 150 mm	6	T.Tool Kit	Standard Quality Long Nose Plier having Length of 150 mm and properly insulated with good quality insulating material
7	Soldering iron 25 W. 240 V.	7	T.Tool Kit	Standard Soldering Iron ISI Marked of Power rating of 25 Watts 230 V respectively
8	Electrician knife	8	T.Tool Kit	A electrician knife made up of Stainless steel and a large blade ,electrician sheepfoot blade and a wire scraper.
9	Tweezers 100mm	9	T.Tool Kit	A good quality tweezer of 100 mm length made up of Stainless Steel straight tipped thoroughly covered with the insulating material
10	Digital Multimeter (3 'A digit)	10	T.Tool Kit	Handheld Digital Multimeters 3 ½ Digit with backlight LCD display incorporating latest technology can measure AC Voltage, DC Voltage, DC Current, AC current, Resistance, Capacitance, Temperature, Battery Test Voltage and Frequency. and can perform Diode Test, Transistor Check, Continuity check, Low Battery display, Data Hold and Auto Power Off and having a built in holster for anti-sliding and confirming to CAT IV 600V.

11	Soldering Iron Changeable bits 10 W	11	T.Tool Kit	A good quality changeable bit of Soldering iron having power rating of 10 W
12	De- soldering pump	12	T.Tool Kit	A quality desoldering pump having spring loaded retractable piston and having a antistatic tip and body made up of high grade plastic or aluminium
13	Steel rule 300mm	1	Machinery Shop outfit	A Standard Steel rule made up of Stainless Steel of 30 cm length having engraved readings in inch and cm .
14	Steel measuring tape-3 m	2	Machinery Shop outfit	A Standard Steel measuring tape of 3 Metre Length enclosed in a case and can be rearranged in a PVC/Metallic case .
15	Tools makers vice 100mm (clamp)	3	Machinery Shop outfit	A hand vice made up of Cast iron or steel having maximum jaw openings of 100 mm.
16	Tools maker vice 50mm (clamp)	4	Machinery Shop outfit	A hand vice made up of Cast iron or steel having maximum jaw openings of 50 mm.
17	Crimping tool (pliers)	5	Machinery Shop outfit	A hand operated crimping tool for crimping of cables sizes of upto 16 sq. mm respectively
18	Magneto spanner set	6	Machinery Shop outfit	A standard forged magneto spanner set of 8 spanners, spanner size ranging from 6 mm to 19 mm.
19	File flat 200mm bastard	7	Machinery Shop outfit	A Standard Flat File long Bastard Type made up of HCS having dimensions of 200 X 20.6 X 5 mm (LX W XT) and handle made of red coloured sheesham wood or good quality plastic.
20	File flat 200mm second cut	8	Machinery Shop outfit	A Standard Half round File second cut type made up of HCS having dimensions of 200 X 20.6 X 5 mm (LX W XT) and handle made of red coloured sheesham wood or good quality plastic..
21	File flat 200mm smooth	9	Machinery Shop outfit	A Standard Flat File longmade up of HCS having dimensions of 200 X 20.6 X 5 mm (LX W XT) and handle made of red coloured sheesham wood or or good quality plastic
22	100mm flat pliers	10	Machinery Shop outfit	Standard Flat Nose Plier having Length of 150 mm
23	100mm round Nose pliers	11	Machinery Shop outfit	Standard Round Nose Plier having Length of 150 mm
24	Scriber straight 150mm	12	Machinery Shop outfit	A Scriber of 15 cm length made from good grade of steel suitable for tool and point made of Tungston Carbide .

25	Hammer ball pen 0.5Kg	13	Machinery Shop outfit	Forged Ball Peen Hammer Having weight of 0.5 KG as a Head Weight and wooden handle made of red coloured sheesham wood.
26	Allen key set (set of 9)	14	Machinery Shop outfit	Standard Hexagonal Allen key Set of 9 pieces size Ranging from 2 mm to 14 mm having champhered heads and made of Chrome Vanadium Steel
27	Tubular box spanner (set of 6Nos)	15	Machinery Shop outfit	Tubular box spanner (set of 6nos) with tommy bars ,hexagon shaft and holes , for turning either with spanner or tommy bar of sizes 6 x7,8X9,10X11,12X13,14X15,16X17 (mm)
28	Magnifying lenses 75mm	16	Machinery Shop outfit	Diameter of 75mm glass lens(3 inches),200m , 5x magnification optical material : glass , size of lense with frame needs to be of - 14.5x 7.5cm minimum
29	Continuity tester	17	Machinery Shop outfit	A Good quality Continuity tester having audible indication and LED indication ,short response time
30	Hacksaw frame adjustable	18	Machinery Shop outfit	Standard Hacksaw frame made of Steel or Iron suitable for 30 cm blade fitment(maximum).
31	Cold chisel 20mm	19	Machinery Shop outfit	Cold chisel made of High Carbon Steel (HCS) having dimension of 250mm Long X 20 mm.
32	Scissors 200mm	20	Machinery Shop outfit	A straight cut scissor made up of stainless steel having a overall length of 200mm.
33	Handsaw 450mm	21	Machinery Shop outfit	A Hand saw of 450 mm blade length made up of High Carbon Steel and handle made up of wood or plastic.
34	Hand Drill Machine	22	Machinery Shop outfit	An hand operated manual drill machine capable of drilling of upto 12 mm hole in metal,cement and wood etc .
35	First aid kit	23	Machinery Shop outfit	Basic first Aid Box suitable for providing first aid to industrial accident victim
36	Fire Extinguisher	24	Machinery Shop outfit	Standard Fire Extinguisher of Dry Powder or CO2 Type capable to extinguish Class C Fire
37	Bench Vice	25	Machinery Shop outfit	A bench vice made up of Cast iron or steel having maximum jaw openings of 100 mm

38	Dual DC regulated power supply 30-0-30 V, 2 Amps	26	Machinery Shop outfit	Dual DC regulated power supply 30-0-30 V, 2 Amps continuously variable , digital read out with LED display for current and voltage , short circuit and over load protection with the facility of fine and coarse fine tuning of voltage and current.
39	DC regulated variable power supply 0-24 V, 1Amp	27	Machinery Shop outfit	DC regulated power supply 0-24 V, 1Amp continuously variable , digital read out with LCD display for volts and current, short circuit and over load protection with the facility of fine and coarse fine tuning of voltage and current.
40	LCR meter (Digital)	28	Machinery Shop outfit	Digital LCR Meter, Large LCD Display, Basic Accuracy : 0.01%, Test Parameters- L-Q, C-D, R-Q, Z -Q, Test Frequency :100Hz, 120Hz, 1KHz, Inductance Range 0.01micro Henry to 9999 Henry, Capacitance range : 0.01pF – 9999mF, Resistance range : from 1 ohm to 10 Mega ohm
41	CRO Dual Trace 20 MHz (component testing facilities)	29	Machinery Shop outfit	CRO 20 MHz, Dual Trace Bandwidth: 20MHz Operating modes: Ch A, Ch B, Alt, Chop, Add Input impedance: $1M\Omega \pm 2\%$, $25pF \pm 3pF$ Sensitivity: 5mV—5V per division Maximum input: 400V Sweep time: 0.1us—0.2s per division Sweep modes: A, XY, Alt, Mag, 5x Mag Capablity of testing active and passive components

42	Signal Generator, 0-100 KHz	30	Machinery Shop outfit	Signal Generator, 0-100 KHz capable of generating sinewave,square wave,triangular wave and saw tooth wave forms and Output dB Range Min -50 dBm (-50 dB) Output dB Range Max 10 dBm (10 dB) and having a facility of varying the output level and frequency with fine and coarse controls and capable of generating carrier wave form and Am,Fm PAM,PWM and PPM waveforms.
43	Battery Charger	31	Machinery Shop outfit	A Battery Charger which provide output ranging from 12V to 24 V and Current ranging from 3Amp to 15 Amp with overload protectionand built in ammeter & Voltmeter
44	Analog multimeter	32	Machinery Shop outfit	A quality Analog multimeter which can measures AC / DC Voltage up to 2500V, AC/DC Current up to 10A, Resistance up to 10M.Ohms, Diode and continuity test facility and having the facility of testing Active and Passive components
45	Function generator (Triangular, square and sine wave)	33	Machinery Shop outfit	Function Generator 0-1 MHz capable of generating sinewave,square wave,triangular wave and saw tooth wave forms and Output dB Range Min -50 dBm (-50 dB) Output dB Range Max 10 dBm (10 dB) and having a facility of varying the output level and frequency with fine and coarse controls and capable of generating carrier wave form and Am,Fm PAM,PWM and PPM waveforms. □
46	Or ELECTRONIC WORK BENCH Instead of sr no's (26,27,29,31,34)		Machinery Shop outfit	Electronic Work Bench meeting the specifications as stated for items at standard list no I 26,27,29,31,34
47	Dimmer state, 3 Amps	34	Machinery Shop outfit	Dimmerstat having max current range -3 Amps for voltage range from 0- 270 v AC suitable for single phase continuos operation

48	Analog Component Trainer	35	Machinery Shop outfit	Analog Component Trainer with all internally mounted components having the Facility to study of ohms law, kirchhoff's law , filters & rectifies ,voltage regulator TRANSISTOR,FET,MOSFET,UJI,all passive and active components with the help of banana socket and patch cords,built in variable power supply of range 0-12 V DC,having analog voltmeters and ammeter for the measurement of parameters. Trainer must have the facility to generate the faults with toggle switches/patch cords and maximum no. of test points to check the volatage and wave forms.
49	Op Amp trainer	36	Machinery Shop outfit	Op Amp trainer study of op - amp(Operational Amplifier)with all internally mounted components to perform the following functions : inv,non -inv , difference amplifier, summing and voltage,follower ,built in variable DC power supply all passive and active components with the help of banana socket and patch cords Trainer must have the facility to generate the faults with toggle switches/patch cords and maximum no. of test points to check the volatage and wave forms.

50	Digital IC Trainer	37	Machinery Shop outfit	<p>A Digital IC trainer which can perform following</p> <p>Study of basic gates and verification of their truth tables (NOT, OR, AND, NOR, NAND, EX-OR, EX-NOR).</p> <ul style="list-style-type: none"> • Study and verifications of the laws of Boolean Algebra and De-Morgan's Theorems. • Study of important TTL terminologies. Verification of important TTL circuit parameters. • Construction and verification of various types of flip - flops using gates & IC's (RS, JK, D, T, M / SJK). • Construction and verification of various types of combinational circuits such as Half Adder, Full Adder, Half Subtractor, Full Subtractor, Even I Odd Parity Checker, Multiplexer, Demultiplexer, Binary to Gray & Gray to Binary Converters. • Construction and verification of various types of Up / Down, Synchronous I Asynchronous, Ripple / Reverse, Ring, Binary, BCD & Decade Counters. • Construction and verification of 4 Bit Universal Shift Register (SR / SL operation). • Study of 7 - segment display and decoder / driver. • Many other experiments are possible using the onboard components and special veroboard provided. (for use of external components without soldering). • DC Power Supply 5 V I 500 mA (IC based regulated output). Clock Generators (TTL, 5V). <p>i. Fixed: a. 0.1Hz b. 1Hz. (Simultaneous independent outputs).</p> <p>ii. Variable: One low frequency variable clock generator.</p> <p>Manual Pulser : One independent buffered bounceless manual pulser (useful or freezing the action of each stage of the counter after every lock pulse).</p> <p>Logic Probe : Logic probe with Low, High & pulse indicator</p> <p>Logic Level Inputs : Eight independent buffered logic level inputs to select High I Low TTL levels, each with a LED to indicate high flow status and termination.</p> <p>Logic Level Indicators : Eight independent buffered logic level indicators for High / Low status indication of digital outputs.</p>
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51	Digital IC Tester	38	Machinery Shop outfit	<p>A digital IC tester which can Tests a wide range of Digital IC's such as 74 Series,40/45 Series of CMOS IC's.</p> <p>,can test Microprocessor 8085, 8086, Z80 and can test Peripherals like 8255, 8279, 8253, 8259, 8251, 8155, 6264,62256,8288,8284 can tests Seven segment display of common cathode & common anode type. It has Auto search facility of Ic's.</p> <p>Test by: Truth table/sequence table comparison.</p> <p>ZIF: 40 pin DIP ZIF sockets.and Keys: 28 Touch-keys Key pad with numerical & functional keys and Display: 9 Digit Seven Segment Display and Supply Input Voltage: 230V AC.</p>
52	Digital and Analog Bread Board Trainer	39	Machinery Shop outfit	<p>Digital and Analog Bread Board Trainer conforming to following specifications</p> <p>Variable Regulated Power Supply : 1.2V to 25V / 200mA for Transistor based experiments.</p> <p>Dual fixed Regulated Power Supply : $\pm 12V$ / 200mA.for Op-Amp. Based Experiments.</p> <p>Fixed Regulated Power Supply : (5V / 200mA) for Digital Logic Based Experiments.</p> <p>Accessories of 50 connecting wires for bread board experiments, 10 wires each of 5 colours.</p> <p>Banana to Crocodile (Red, Black, Green) to connect any of the power supply.</p>
53	Rheostats various values and ratings	40	Machinery Shop outfit	<p>Rheostat of 120 Watts,200 Watts in single tube.</p> <p>Higher ratings with multiple tubes.</p> <p>Ohmic Value :0.3Ω to 25KΩ</p> <p>Current Range:0.3A to 40A</p> <p>Tolerance :$\pm 10\%$. Standard.</p> <p>Temperature Co-efficient :$\pm 50\text{ppm}/^\circ\text{C}$ to $\pm 200\text{ppm}/^\circ\text{C}$</p>

54	POWER ELECTRONICS TRAINER with at least 6 no's of onboard applications	41	Machinery Shop outfit	POWER ELECTRONICS TRAINER with at least 6 no's of onboard applications with power semiconductor application ,panel converter/ inverter panel , triggering,short circuit protection panel , SC rapping head panel , 1GB / MOSFET inverter panel, power semiconductor application panel using IC 555 Trainer must have the facility to generate the faults with toggle switches/patch cords and maximum no. of test points to check the voltage and wave forms.
55	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.	42	Machinery Shop outfit	Latest PC 4th Generation(Intel i7 microprocessor ,3.4 GHz,8 MB cache with 4 GB Ram and 1 TB Hardisk ,Wifi enabled ,USB optical mouse,multimedia key board LED and 23" LED Monitor ,Standard ports and connectors ,DVD Writer ,Speakers and Mic with window 8.1 and antivirus preloaded.
56	Laptops latest configuration	43	Machinery Shop outfit	4th Generation intel i7 processor(3.4 GHz, 8 MB Cache with4 GB RAM, 1 TB harddisk, wi-fi enabled, USB optical mouse, 15"LED Screen , Standard ports and connectors, DVD Writer, inbuilt Speakers and Mic. with web camera with preloaded licensed window 8.1 or latest operating system and latest internet security input. preloaded licensed latest version MS Office
57	Laser jet Printer	44	Machinery Shop outfit	Workgroup printer - Laser - Laser - Monochrome - Monochrome Legal (8.5 in x 14 in) A4 (210 x 297 mm) A4 (8.25 in x 11.7 in) Legal (216 x 356 mm)Printer / Interface USB, minimum speed 30 PPM, Print Quality: Upto 2400x600 dpi with automatic image refinement. Print Resolution: Upto 600x600 dpi, having option of double sided printing, Automatic, Memory: minimum 16 MB.

58	INTERNET BROADBAND CONNECTION	45	Machinery Shop outfit	A Broad band Connection with all the accessories like modem ,ADSL splitter etc and wiring suitable for easy access to the place of PC
59	Electronic circuit simulation software with 6 user licenses	46	Machinery Shop outfit	Electronic circuit simulation software MULTISIM or SIMETRIX latest with 6 user licenses
60	Different types of electronic and electrical cables, connectors, sockets, terminations.	47	Machinery Shop outfit	FPC Connectors,PCB Connectors,Audio Visual Cable,VGA Cable,Extention Power Cords,Power cords Video Cable,
61	Different types of Analog electronic components, digital ICs, power electronic components, general purpose PCBs, bread board, MCB, ELCB	48	Machinery Shop outfit	1.Electronic components like transistor BC148, BC548, AC128, AC127., 2. Digital ICs like IC 555,IC 7805, IC 7812, IC 7809, IC 7905, IC,7909, IC 7912, 3. Power electronic compoments like IN4001, IN4002, IN4007, IN4009, BY127, SCR TY604, TY6004, 6N60 Mosfet, 5N80 Mosfet.
62	Crimping tools as necessary for performing terminations mentioned week no 17-21 of SEMSTER-1	49	Machinery Shop outfit	A hand operated crimping tool for crimping of cables sizes of upto 16 sq. mm respectively
63	Instructor's table	1	Furniture	Body made from MS square pipe 30 x 30 mm (16 gauge) top size 4' x 2.5' x 2.5' ,commercial ply 19 mm on 1 mm sunmica right hand 3 drawer with lock, MS sheet 22 GAUGE with powder coated paint.
64	Instructor's chair	2	Furniture	Chair Frame made of M.S Square Pipe 25 mm, thickness of pipe 1.5 mm, seat size18" x 18" , height 18" with arms, seat and back cushion,Suitable powder coating paint

65	Metal Rack, 100cm x 150cm x 45cm	3	Furniture	A Standard metal shelving rack open type made up of iron having structural arrangement of L angles so that the shelves can be easily adjusted into it and shelves should be made up of 20 SWG material and no. of shelves should be 5 .The Dimensions of the rack will be of 100 X 150 X 45 cm. .
66	Lockers with 16 drawers standard size	4	Furniture	A Standard Steel Locker having dimensions of 2.5 m x 1.20 m x 0.5 m having 16 compartments and material of the locker must be of 20 SWG and entire locker should be powder coated with locking arrangement for each compartment.
67	Steel Almirah, 2.5 m x 1.20 m x 0.5 m	5	Furniture	A Standard Steel Almirah made up of Steel having 2.5 M X 1.20 M X 0.5 M Dimensions (Length X Breadth X Height) and 4 shelves (5 compartments)The material of the almirah is of 20 SWG and entire almirah should be powder coated with proper locking arrangement.
68	Black board/white board	6	Furniture	A Framed Magnetic White board size of 8 Feet X 4 Feet made of steel which has a thickness of 2 mm of steel sheet supported on wooden arrangement ,rust free and stain resistant material fitted with duster and marker holder.

69	DSO (colour)	1	Tools	<ul style="list-style-type: none"> ● Up to 25MHz Bandwidth 1GSa/s sample rate ● 7" TFT-LCD display, 8*18 grids ● Channels: 2CH+1EXT ● Memory Depth: 40Kpts, 5Kpts/CH (SDS1202CNL) ● 6 digits hardware frequency counter, real time counting display ● Support SCPI programming command control ● Interface: USB Device, USB Host, RS-232, Pass/Fail ● Unique digital filter and data recorder function ● Embedded 12 languages, online help, one key storing and one key printing <p>CHARACTERISTIC:</p> <ul style="list-style-type: none"> ● The highest Single real-time sampling rate can be up to 500MHzsa/s; Equivalent sampling rate is up to 50GSa/s. ● Memory Depth: 32Kpts ● Trigger types: Edge, Pulse Width, Video, Slope, Alternative ● Unique Digital Filter function and Waveform recorder function ● Support Pass/Fail function. ● Thirty two parameters Auto measure function. ● Save/recall types: Setups, Waveforms, CSV file, Picture. ● Support Multilingual On-line help system ● Waveform Intensity and Grid Brightness can be adjusted. ● Support twelve types Language ● Standard Configuration Port: USB Host: Support USB flash driver save/recall function and update firmware; USB Device: Support Pict Bridge compatible printer and support PC remote control; RS232; Pass/Fail Output.
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70	Soldering & De soldering Station	2	Tools	Input Voltage : 190 V to 270C Output Voltage : 24VAC, Soldering Wattage : 60 Watts, De-Soldering Wattage : 70 Watts Temp Range : 180 - 480°C Temp Accuracy : $\pm 1^{\circ}\text{C}$ Tip to ground potential : Under 2MV Tip to ground Leakage : Under 2 Vacuum : 600mm/Hg High Quality 24V DC Pump with 4000 RPM Accessories : Control Unit - 1 No., Soldering Iron - 1 No. De-Soldering Iron - 1 No. Combined Soldering & De-Soldering Stand -1 No. Power Cord - 1 No. Tool Box Containing : Primary Filter - 15 Nos , Secondary Filters - 5 Nos Silicon Washer Set - 1 Set, Glass Tube - 1 No. Nozzle Cleaning Spring - 1 No.
71	SMD Soldering & De soldering Station with necessary accessories	3	Tools	A SMD soldering and desoldering station with following accessories Power Consumption: 20W Pump Type: Diaphragm pump Air flow rate: 24 L/min (max) and high precision air and heat control for welding and removing with security and reliability, anti-static design (prevents PCB from being damaged by static electricity or current leakage) with up to 320W power consumption.
72	DOL starter	4	Tools	A DOL Starter enclosed in a metallic box powder coated capable of starting the motor of upto 0.25 HP having individual indicators for POWER ON,MOTOR ON,MOTOR TRIP with EMERGENCY STOP SWITCH and protection against Voltage Surge

73	AC motor ^x A HP	5	Tools	A quality TEFC(Totally enclosed Fan Cooled) motor of capacity of 0.25 HP ,Single phase 2 pole motor having B or F class of insulation having duty cycle of S1 or S2 and having ambient tempreature of 40 C.
74	ORELECTRICAL TRAINER FITTED WITH RESOURCES MENTIONED AT SL NO (DOL starter, contactors, relays, MCB, Motor suitable for electrical control circuit exercises)	6	Tools	or ELECTRICAL TRAINER FITTED WITH RESOURCES MENTIONED AT SI No (DOL starter, contactors, relays, MCB, Motor suitable for electrical control circuit exercises)

75	Frequency modulator and Demodulator trainer kit	7	Tools	<p>Frequency modulator and Demodulator trainer kit conforming to following</p> <p>On-board message signal with variable Amp/Freq On Board carrier signal ,</p> <p>FM Modulation and Demodulation using PLL Detector LPF 4th Order LPF</p> <p>Internal Power Supply +5V , +12V/ 500 mA</p> <p>Number of test point to study the FM system</p> <p>User friendly front panel block diagram</p> <p>Technical Specification</p> <p>Message Signal :</p> <p>Sine wave Frequency 100 Hz to 2.8 KHz</p> <p>Amplitude 0 to 3V</p> <p>Carrier Signal : Sine wave Frequency 100 KHz</p> <p>Amplitude 5V Modulation Demodulation : PLL Detector & LPF Low Pass Filter : 4th Order LPF</p> <p>Supply Voltage (Board) : +12V, +5V / DC</p> <p>Supply current : 100 mA (Minimum)</p> <p>Input Voltage : 230 V/ 50 Hz AC Interface connectors : 2mm socket</p> <p>Trainer must have the facility to generate the faults with toggle switches/patch cords and maximum no. of test points to check the voltage and wave forms.</p>
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76	PAM, PPM,PWM trainer kit	8	Tools	<p>PAM, PPM,PWM trainer kit conforming to following Pulse Modulation : 1. Pulse Amplitude Modulation 2. Pulse Position Modulation 3. Pulse Width Modulation On board Sampling Frequency (Pulse) : 8 KHz, 16 KHz, 32 KHz, 64 KHz On board Generators : 1. Sinewave 1 KHz & 2 KHz (Gain Adjustable) 2. Square wave 1 KHz & 2 KHz Low Pass Filter : for sampling Voice Communication : Voice Link using Dynamic Mic & Speaker AC Amplifier : With adjustable gain control DC Output : 0- 4 V Interconnections : 2 mm Sockets Power Supply : 230 V \pm 10%; 50 Hz Power Consumption : 3 VA (approximately) Trainer must have the facility to generate the faults with toggle switches/patch cords and maximum no. of test points to check the volatage and wave forms.</p>
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77	AM/FM Commercial radio receivers	10	Tools	<p>Specifications:</p> <p>Telescopic Antenna of 2 Feet minimum length</p> <p>Frequency of Operation:</p> <p>AM Band 500 KHz to 1750 KHz</p> <p>FM Band 88MHz -108 MHz</p> <p>Ground plane required: None</p> <p>AM capture length: 300 inches</p> <p>AM / FM Band Separator Performance:</p> <p>FM rejection in AM band: > 50 dB</p> <p>AM rejection in FM band: > 60 dB</p> <p>AM/FM Pass-band loss: < 1dB</p> <p>AM load impedance: 300 ohms</p> <p>FM load impedance: 75 ohm</p>
78	Microcontroller kits (8051) along with programming software (Assembly level Programming)	11	Tools	Microcontroller kits (8051) along with programming software (Assembly level Programming)
79	Application kits for Microcontrollers 6 different applications	12	Tools	Application kits for Microcontrollers 6 different applications

80	Sensor trainer kit (containing Various sensors like Thermocouple, RTD, Thermocouple, load cell, strain gauge, LVDT, smoke sensors, speed sensor)	13	Tools	Sensor trainer kit (containing Various sensors like Thermocouple, RTD, Thermocouple, load cell, strain gauge, LVDT, smoke sensors, speed sensor and the medium/monitoring system to display the output of sensors enlisted as above.
81	Various analog and digital ICs useful for doing project works mentioned in the digital and analog IC applications modules	14	Tools	Various analog and digital ICs useful for doing project works mentioned in the digital and analog IC applications modules
82	Different types of electronic and electrical cables, connectors, sockets, terminations.	15	Tools	A mixture of electrical cables of 2C X 1.5 Sq.mm or 2C X 1 Sq.mm like flexible cables,armoured and unarmoured cables of length having approximately 10 Ft. A mixture of electronic cable of single core to 12 core having different colour coded having length of each type tentatively -1 Metre Connectors ,sockets and termination material (like Lugs,Insulating tape
83	Discrete computer system components such as HDD, DVD, memory modules, , cables	16	Tools	SATA Hard Disk Drive (HDD) Internal-500 GB,External-500 Blank DVD- 05 Nos Connecting Cables-05 Nos SMPS-A 450 Watt SMPS supply having 24 pin SATA connector enclosed in a box and having DC output of +5 V and current of 40 A

84	Crimping tools as necessary for performing terminations mentioned in the exercises of week no's 1 and 2	17	Tools	Crimping tools made up of iron ,properly galvanized,insulated and with handles covered with rubber suitable for crimping the wires or cables upto 16 Sq.mm.
85	Fibre optic communication trainer	1	Tools	<p>Fiber optic communication trainer having following SPECIFICATION</p> <p>Transmitter : 01 no. Fiber Optic LED</p> <p>Receiver : 01 no. Fiber Optic Photo detector</p> <p>Modulation Techniques : 1. AM 2. FM 3. PWM.</p> <p>Drivers : 01 no. with Analog & Digital modes</p> <p>PLL Detector : 01 no. Provided.</p> <p>Comparator : 01 no. provided.</p> <p>Analog Bandwidth : 350 KHz.</p> <p>Digital Bandwidth : 2.5MHz.</p> <p>Function Generator : 1 KHz Sine wave (amplitude adjustable).</p> <p>1 KHz Square Wave (TTL).</p> <p>Fiber Optic Cable : 02 nos of different Lengths viz: a. 0.5 meter & b. 1 meter (with standard SMA type connector).</p> <p>Cable Type : Step indexed multimode PMMA plastic cable.</p> <p>Power Supply : 230V + 10% VAC, 50 Hertz, single phase.</p> <p>Accessories Included : Detailed Instruction Manual, Microphone, Headphone, Set of 8 assorted multicoloured multistrand wires with 4 mm plug terminations at both ends having different test points to observe the waveform and measure other parameters.</p>

86	SMPS trainer	2	Tools	<p>SMPS Trainer with all internally mounted components having the Facility to</p> <p>Study of Switching Transformer</p> <p>Study of PWM switching device</p> <p>Study of Optocoupler</p> <p>Study of Regulation</p> <p>Study of SMPS with Variac input</p> <p>Study of various faults and their removal in SMPS circuit</p> <p>Trainer must have the facility to generate the faults with toggle switches/patch cords and maximum no. of test points to check the volatage and wave forms and having Specifications :</p> <p>Input : 80 to 230 V AC $\pm 10\%$, 50 / 60 Hz</p> <p>Outputs : +5 V and ± 12 V DC regulated</p> <p>Switching Transformer :</p> <p>Input : 320 V DC switching at 132 KHz</p> <p>Output : 30 V AC (approx)</p> <p>Fuse : 500 mA (Slow blow, spare fuse is given with mains socket)</p>
87	SMPS of different make	3	Tools	<p>SMPS of following type</p> <ul style="list-style-type: none"> · D.C. to D.C. Converter: · Forward Converter: · Flyback Converter: · Self-Oscillating Flyback Converter <p>of different make</p>
88	UPS trainer	4	Tools	<p>An UPS trainer capable of performing of following functions</p> <p>Study of PWM Technology</p> <p>To understand the overall functioning of UPS Trainer</p> <p>Study of AVR transformer section of UPS</p> <p>To study the UPS circuit in load condition</p> <p>To identify different faults and to study the systematic procedure of their troubleshooting in UPS circuit</p>

89	UPS 3 KVA	5	Tools	A quality inline UPS of 3 KVA having surge protection a ,fault indications,circuit diagram printed ,Full time multi-pole noise filtering : 5% IEEE surge let-through : zero clamping response time,Resettable circuit breakers, along with batteries for providing the back up of 3KVA for 30 minutes along with the connecting leads,rack for batteries and for UPS															
90	Precision set of screw drivers- T5, T6, T7	6	Tools	<div>A precision set of Screwdrivers T5,T6,T7 conforming to following specifications with a cushioned grip handle .</div> <table><tr><th>Size</th><th colspan="2">Point-to-point distance</th></tr><tr><th></th><th>Inch</th><th>MM</th></tr><tr><td>T5</td><td>0.055</td><td>1.42</td></tr><tr><td>T6</td><td>0.066</td><td>1.70</td></tr><tr><td>T7</td><td>0.078</td><td>1.99</td></tr></table>	Size	Point-to-point distance			Inch	MM	T5	0.055	1.42	T6	0.066	1.70	T7	0.078	1.99
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91	LCD TV Trainer kit	7	Tools	<p>LCD TV Trainer kit having following features</p> <ol style="list-style-type: none"> 1. The block diagram should be printed on single PCB. 2. Fault creation facilities should be provided by switches. 3. Section wise different colored screen printed circuit should be on the PCB for easy understanding of functions of different sections. 4. Typical ICs should be provided on sockets. 5. Explanation, Observation, Alignment and adjustment of internal and External controls should be possible at a glance . 6. Having the facility of easy measurement of Voltages and observation of waveforms at any point. Also typical voltages and waveforms should be printed on the kit. <p>and conforming to following specifications</p> <p>A1. Display : 21"Diagonal Size ,Flat panel display / TFT active matrix Max Resolution : 1280 x 1024 , Aspect ratio : 4:3 or other compatible</p> <p>2. Image , Image Brightness : 300 cd/m2 Image Contrast Ratio : 1000:1 (minimum) Image Max H-View Angle : 160 , Image Max V-View Angle : 160</p> <p>3. Interface , Analog Video Input : RGB VGA (HD-15) Analog Video Input : S-Video , Composite Video Input : RCA Yellow, Audio Input : RCA- Left (White), Right (Red) , Antenna RF Input : RF - SDTV/ PAL , USB and HDMI interface</p> <p>4.. On Screen display : Volume, Brightness, Contrast, Color, Channel, Tuning.</p> <p>5. Remote Control functions : On screen display of Volume, Brightness, Contrast, Channel</p> <p>6. Audio Amplifier : 3 W PMPO</p> <p>7. Power supply : 230V AC, 50 Hz.</p>
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92	LED TV Trainer kit	8	Tools	<p>LED TV Trainer kit having following features</p> <ol style="list-style-type: none"> 1. The block diagram should be printed on single PCB. 2. Fault creation facilities should be provided by switches. 3. Section wise different colored screen printed circuit should be on the PCB for easy understanding of functions of different sections. 4. Typical ICs should be provided on sockets. 5. Explanation, Observation, Alignment and adjustment of internal and External controls should be possible at a glance . 6. Having the facility of easy measurement of Voltages and observation of waveforms at any point. Also typical voltages and waveforms should be printed on the kit. <p>and conforming to following specifications</p> <p>A1. Display : 21"Diagonal Size ,Flat panel display / TFT active matrix Max Resolution : 1280 x 1024, Aspect ratio : 16:9 and other compatible</p> <p>2. Image Image Brightness : 300 cd/m2 , Image Contrast Ratio : 1000:1 (minimum), Image Max H-View Angle : 160, Image Max V-View Angle : 160</p> <p>3. Interface Analog Video Input : RGB VGA (HD-15), Analog Video Input : S-Video, Composite Video Input : RCA Yellow, Audio Input : RCA- Left (White), Right (Red), Antenna RF Input : RF - SDTV/ PAL</p> <p>USB and HDMI interface</p> <ol style="list-style-type: none"> 4.. On Screen display : Volume, Brightness, Contrast, Color, Channel, Tuning. 5. Remote Control functions : On screen display of Volume, Brightness, Contrast, Channel 6. Audio Amplifier : 3 W PMPO 7. Power supply : 230V ,50Hz
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93	LCD and LED TV	9	Tools	<p>A quality LCD TV based on latest technology of Screen size 21 inch having Native Display Resolution of 1920 x 1080 and Contrast Ratio (DCR) of 100,000:1 and Response Time of 4 ms ,Aspect Ratio of 16:9 with the Aspect Ratio correction and screen size of 21 inch with inbuilt speakers dolby surround sound and having the facility of HDMI and USB connectivity having RS232 and HDMI ,USB port connectivity.</p> <p style="text-align: center;">&</p> <p>A quality LED TV based on latest technology of Screen size 21 inch having refresh rate of 100 Hz clear motion rate ,active noise reduction facility,aspect ratio of 16:9 with the facility of aspect ratio correction having down firing and full range speakers and having the facility of HDMI and USB connectivity having RS232 and HDMI ,USB port connectivity.</p>
94	Allen key screw driver	10	Tools	An Allen key screw driver made of Chrome Vanadium Steel with the cushioned grip handle and tip size of 3 mm, 4 mm,5 mm , 6 mm , 9 mm and 10 mm.
95	Regulated power supply variable for cell phone repair	11	Tools	0-300 V , 500 MA range 0-30VDC continously variable by means of fine controls, Display 3.5 Digit , 0.5" inch Brightness LED for voltage and current POWER requirements 230 V AC +- 10%

96	CCTV set up	12	Tools	<p>Electrical Specifications:</p> <ul style="list-style-type: none"> • Voltage range: 8 to 18 VDC. • Composite Video Output: 1.0 Vp-p, 75 ohms. • Resolution: Horizontal: 480 TVL. • Backlight compensation: Selectable On/Off through DIP switch. • Sync: Internal crystal-lock • Imager: 1/3-inch, interline Super HAD CCD • Signal to noise ratio: More than 48 dB at AGC off. • Electronic Shutter: 1/50 to 1/100,000 sec. • White balance: Automatic <p>Mechanical Specifications:</p> <ul style="list-style-type: none"> • Connectors: Video Out: BNC. Power: DC Jack type • Horizontal Adjust Angle: 0°~360°; Vertical Adjust Angle: 0°~60° <p>Lens:</p> <ul style="list-style-type: none"> • Focal Length (mm) : 5 ~ 50 (10x) • Iris Range : F1.6 ~ T360 (Equivalent to F360) • Angle of View (H X V) 1/3" <p>WIDE : 51°17' X 39°36'</p> <p>TELE : 5°30' X 4°07'</p> <ul style="list-style-type: none"> • Focusing Range (From Front Of Lens) (m) : ∞ ~ 0.3 • Back Focal Distance (In Air) (mm) : 7.52 (W) - 7.46 (T) • Mount : CS • When power is turned off, iris will automatically be closed <p>with 6 cameras , compatible DVR having storage of 1 TB and monitoring workstation of 32 inch along with connecting material and other required accessories.</p>
97	Washing machine (auto and semi automatic)	13	Tools	<p>A semi automatic washing machine of quality make top loaded of 8 Kg capacity with spinner ,having different timers to control the time and separate motors for wash tub and spinner.</p> <p style="text-align: center;">&</p> <p>A front loaded fully automatic washing machine having inbuilt heating facilities and capacity of the machine needs to be 15 Kg atleast.</p>

98	Vacuum cleaner	14	Tools	Handheld Vacuum Cleaner having 0.55 L Dust Capacity of bag ,5 m Cord ,30 mins continuous Run Time and air flow of 60 litre /min.
99	Microwave oven 20 liters (two technologies)	15	Tools	A 20 Litre microwave oven of Intellrowave Technology, Two Stage Cooking, Quick Start, Cooking Completion Alarm, Electronic Touch Panel, Auto Defrost System having Microwave Frequency (MHz) 2450 MHz
100	Mixer cum grinder	16	Tools	A mixer cum grinder having following specifications Power Consumption of around 450 watts (full load) Motor Type : Universal Voltage :230 V A.C, 50Hz, Continuous run time : 30 Minutes (maximum) Capacity Work Bowl - 350 gms Small Grinder Jar - 150 gms Big Grinder Jar - 300 gms
101	Steam iron	17	Tools	A steam iron of quality make ISI marked having soleplate finished and a continuous steam output of 15g/min having water tank storage of 150 ml and a power rating of around 1200 Watts
102	Electric rice cooker	18	Tools	An Electric rice cooker of stainless steel close fit lid with Two aluminum cooking pans,Cool touch handles Detachable power cord,Cooks upto 1 kilogram of rice Power: 700 watts;

103	Water purifier(RO and UV technologies)	19	Tools	Water purifier Suitable for Purification of Brackish / Tap Water,PURIFICATION CAPACITY of Upto 15 LPH,BODY MATERIAL made of ABS Food Grade Plastic ,suitable for fitment of MOUNTING on the Wall, INLET WATER PRESSURE/TEMP (MIN) 0.3 kg / cm2 or 4.267psi / 10°C INLET WATER PRESSURE/TEMP (MAX) 3 kg / cm2 or 42.67psi / 35°C FILTER CARTRIDGES Sediment, Carbon Block Filter, UF AUTO-FLUSHING SYSTEM ,UV LAMP WATTAGE, POWER CONSUMPTION of 60 W ,STORAGE CAPACITY of 8 L,PURIFICATION PRODUCTION RATE of 15 L/hr. MAXIMUM DUTY CYCLE of 75 L/day ,MEMBRANE TYPE Thin Film Composite RO ,UF FILTER ,Ultra Filtration Membrane ,BOOSTER PUMP VOLTAGE 24 V DC
104	Immersion Heater	20	Tools	A screw plug immersion heater ratings of 400 to 1000 Watts
105	Induction cooktop	21	Tools	An induction cooktop having manual tempreature control ,push button control ,ceramic body material and having sufficient of providing tempreature of 100 Degree Celcius.
106	Home theatre system	22	Tools	A good quality 4.1 Home thetre system i.e with 4 speakers and 1 woofer having the functions uch as Built-in FM Radio,LED Display, Fully Functional Remote Control Supports SD / MMC Memory Cards & Pen Drives

107	Printers (DMP, laser)	23	Tools	<p>Workgroup printer - Laser - Laser - Monochrome - Monochrome Legal (8.5 in x 14 in) A4 (8.25 in x 11.7 in) Printer / Interface USB, minimum speed 30 PPM, Print Quality: Upto 2400x600 dpi with automatic image refinement. Print Resolution: Upto 600x600 dpi, having option of double sided printing, Automatic, Memory: minimum 16 MB.</p> <p style="text-align: center;">&</p> <p>A dot matrix printer having 9 number of pins in head minimum and having bidirectional print direction and having acoustic noise of around 53 dB.</p>
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108	LCD / LED Projector	24	Tools	<p>An LED projector conforming to following</p> <p>LED + Single LCD technology Brightness 2600 peak lumens Resolution support 800x600</p> <p>Native resolution upto 1080p/i, 720p/i, VGA, XGA, WXGA, WVGA Contrast Ratio 1200:1</p> <p>Aspect Ratio 4:3/16:9 1080p</p> <p>HD compatible 28 dB image size 40'-120</p> <p>Offset 80% Uniformity 85 % lamp life</p> <p>20,000 hours Input HDMI/VGA/USB/SD</p> <p>Card/Video/S-video/ Stereo Audio/Component video</p> <p>DVBT TV/Cable TV × 2 x RCA</p> <p>&</p> <p>LCD projector confirming to following</p> <p>DLP/LCD/LCOS: DLP</p> <p>Illumination: 2000</p> <p>Contrast Ratio: 60000:1</p> <p>Aspect Ratio: 16:9</p>
109	DTH with accessories	25	Tools	A Standard size Low Noise Block downconverter(LNB) dish with set top box of latest technology and connecting material with remote control
110	SAT meter	26	Tools	Freq.Range 250-2150 MHZ, Signal level Range-10-69 dbm I/P impedance 75 ohm, power supply 12 to 18V, LNB power supply 21V
111	Co- Axial cable cutter	27	Tools	a coaxial cable cutter made up of HCS and handles covered with cushioned grip material capable of cutting the coaxial cable
112	Jacket stripper/ Coring tool for 500 series cable	28	Tools	A quality jacket stripper/Coring tool for 500 series cable with cushioned handle

113	Centre conductor cleaner	29	Tools	A centre conductor cleaner that Removes Burrs That Can Damage Connectors, Cleans Away Bonded Dielectric Without Scoring The Center Conductor
114	Universal drop trimmer for RG 6/11 cables	30	Tools	A quality Universal drop trimmer tool for RG 6/11 cables with cushioned handle
115	F - connector tool for RG 6/11 cables	31	Tools	A quality F - connector tool for RG 6/11 cables with cushioned handle
116	F - connector compression tool for RG 6/11 cables	32	Tools	A quality F - connector compression tool for RG 6/11 cables with cushioned handle