

Name of the Trade		ELECTROPLATER	
S.No	Name of the item	Std List No.	Specifications
(i)	(ii)	(iii)	(iv)
1	Steel Tape, 15 m length	1	Steel metal tape with inch and cm detail ,Standard Quality I.S.I./I.S.O. Mark
2	Plier Insulated, 150 mm	2	Chrome Vanadium hardened & tempered Flat Serrated Jaws Insulated with Thick C.A. Conforming I S 3650-1981 Standard and Other I.S.I. & I.S.O. Mark
3	Plier Side Cutting, 150 mm	3	Chrome Vanadium hardened & tempered Flat Serrated Jaws Insulated with Thick C.A. Conforming I S 3650-1981 Standard and Other I.S.I. & I.S.O. Mark
4	Screw Driver, 100 mm	4	chrome Vanadium Steel Screw driver having Cellulose Acitate Transparent handle with I.S Standard, I.S.O. Mark Company.
5	Screw Driver, 150 mm	5	chrome Vanadium Steel Screw driver having Cellulose Acitate Transparent handle with I.S Standard, I.S.O. Mark Company.
6	Electrician Connector, screw driver insulated handle thin stem, 100 mm	6	Chrome Vanadium Steel Screw driver having Cellulose Acitate Transparent handle as per IS-844-1979 and any other I.S.O. mark company
7	Heavy Duty Screw Driver , 200 mm	7	Chrome Vanadium Steel Screw driver having Cellulose Acitate Transparent handle as per IS-844-1979 and any other I.S.O. mark company
8	Electrician Screw Driver thin stem insulated handle, 250 mm	8	Chrome Vanadium Steel Screw driver having Cellulose Acitate Transparent handle as per IS-844-1979 and any other I.S.O. mark company
9	Punch Centre , 150 mm X 9 mm	9	Chrome Vanadium Steel,Standard Quality I.S.I. Mark
10	Knife Double Bladed Electrician	10	insulated handle,Standard Quality I.S.I. I.S.O. Mark
11	Neon Tester	11	neon lamp and long knob,Standard Quality I.S.I. I.S.O. Mark
12	Steel Rule 300 mm	12	Stainless Steel tempered and chrome finish
13	Hammer, cross peen with handle	13	Drop forged Carbon Hardened & Tempered as per IS 841-1983 with Seasosned Saal Wood Handle Make I.S.I. and I.S.O. mark co.
14	Hammer, ball peen With handle	14	Drop forged Carbon Hardened & Tempered as per IS 841-1983 with Seasosned Saal Wood Handle Make I.S.I. and I.S.O. mark co
15	Gimlet 6 mm.	15	including bit and Standard Quality I.S.I. I.S.O. Mark
16	Bradawl	16	square rod and plastic /wooden handle,Standard Quality I.S.I. I.S.O. Mark
17	Scriber (Knurled centre position)	17	Knurled centre position,Standard Quality I.S.I. I.S.O. Mark
18	Pincer 150 mm	18	size-15cm,Standard Quality I.S.I. I.S.O. Mark
NOTE : For 2nd Unit of the Trade, only Trainees Tool Kit (from S.No. 1 to18) is required additionally.			
19	C- Clamp 200 mm, 150 mm and 100 mm	1	pig iron material used
20	Spanner Adjustable 150 mm,300mm	2	Cly-burns-Drop Forged Chrome Vanadium Stell Chrome plated Hardened & as per IS 16149-1984 make I.S.I. or any other I.S.O. mark company
21	Blow lamp 0.5 ltr	3	brass metal container
22	Melting Pot	4	heavy duty container
23	Ladel	5	heavy duty container with long handle
24	Chisel Cold firmer 25 mm X 200 mm	6	Fully Forged Induction Hardened Carbon Steel Cold Flat chisel as per IS 5663-1970 make I.S.I or any I.S.O. mark
25	Chisel 25 mm and 6 mm	7	with wooden /PVC handle
26	Hand Drill Machine	8	gear type

27	Portable Electric Drill Machine 6 mm capacity	9	MAX DRIL DIA 13MM , RATED VOLTAGE- LAGGING 110-220VOLT, NO OF LOAD SPEED 0-3000RPM, WEIGHT 2KG FRQ. 50-60 HTZ, RATED INPUT VOLTAGE 550 W
28	Pillar Electric Drill Machine 12 mm capacity	10	Electric drill machine portable 6mm capacity Technical Specifications • Specification in mm : 12 mm • Speed : 4 • Spindle Nose Taper : Solid • Range of Speed : 500-2825 • Spindle Center to Column : 155 • Spindle Travel : 75 • Size of Square Table : 210 x 200 • Base Size : 340 x 220 mm • Max Distance From Spindle to Base : 356 • Working Surface of Base Plate : 170 x 170 • Power Required for Electric motor : 0.5 to 1.HP Make-Any reputed company having ISO Certification /ISI standards. Note:- The equipment will be supplied with necessary tools, attachments and standard accessories, etc.Tenderer should mention list of all standard accessories .
29	Allen Key	11	CRV Steel drop forged black finish champ head with proper heat treatment make I.S.I. or any I.S.O mark
30	Oil Can 0.12 ltr	12	Heavy duty M.S.body oil can with good spring lever and oil capacity 250 ml, Standard Quality
31	Grease Gun	13	minimum 0.5 kg
32	Out Side Micrometer	14	Outside Micrometer RANGE:0-25 mm. Satin-finished chrome frame, tapered (on the anvil side) for hard-to-reach places Carbide-tipped measuring faces Design to be operated efficiently with one hand
33	Motorised Bench Grinder	15	Body : The body is made of high grade cast iron, normalised to ensure strength and rigidity, consist Three phase motor more than 1 HP
34	Rawl plug tool and bit	16	min. 1.5mm size
35	Pully Puller	17	Three/ Four leg having andStandard Quality I.S.I. / I.S.O. Mark
36	Bearing Puller	18	Three/ Four leg having andStandard Quality I.S.I. / I.S.O. Mark
37	Pipe vice	19	mks system,Standard Quality I.S.I. / I.S.O. Mark
38	Thermometer 0 to 100 deg Centigrade	20	mercury type,Standard Quality I.S.I. / I.S.O. Mark
39	Scissors blade 150 mm	21	brass metal material
40	Crimping Tool	22	upto 100 Amper thimbel crimping and Standard Quality I.S.I. / I.S.O. Mark
41	Wire stripper 20 cm	23	upto 6mm cable skinning andStandard Quality I.S.I. / I.S.O. Mark
42	Chisel Cold flat 12 mm	24	Fully Forged Induction Hardened Carbon Steel Cold Flat chisel as per IS 5663-1970 make I.S.I or any I.S.O. mark
43	Mallet hard wood 0.50 kg	25	Teak/shisham wood material
44	Hammer Extractor type 0.40 kg	26	Drop Forged Carbon Hardened & Tempered with Seasoned Saal Wood Handle make I.S.I. or any other I.S.O. mark company.
45	Hacksaw frame 200 mm 300 mm adjustable	27	Drop Forged Carbon Hardened & Tempered with Seasoned Saal Wood Handle make I.S.I. or any other I.S.O. mark company.
46	Try Square 150 mm blade	28	6" and Standard Quality I.S.I. / I.S.O. Mark
47	Outside and Inside Divider Calliper	29	more than 150 mm andStandard Quality I.S.I. / I.S.O. Mark
48	Pliers flat nose 150 mm	30	Chrome Vanadium Steel hardened and Tempered Jaws insulated with Thick C.A. Sleeve Standard make I.S.I. or any other I.S.O. mark company
49	Pliers round nose 100 mm	31	Chrome Vanadium Steel hardened and Tempered Jaws insulated with Thick C.A. Sleeve Standard make I.S.I. or any other I.S.O. mark company

50	Tweezers 100 mm	32	heavy duty
51	Snip Straight and Bent 150 mm	33	kmannie make
52	D.E. metric Spanner	34	Drop forged Chrome Vanadium Steel hardened and Tempered with Chrome plated set of 12 pieces make I.S.I. or any other I.S.O. company
53	Drill hand brace	35	with bit set
54	Drill S.S. Twist block 2 mm, 5 mm 6 mm set of 3	36	Standard Quality I.S.I. / I.S.O. Mark
55	Plane, smoothing cutters 50 mm	37	Standard Quality I.S.I. / I.S.O. Mark
56	Gauge, wire imperial	38	Standard Quality I.S.I. / I.S.O. Mark
57	File flat 200 mm 2nd cut	39	200mm,Standard Quality I.S.I. / I.S.O. Mark
58	File half round 200 mm 2nd cut	40	20cm,Standard Quality I.S.I. / I.S.O. Mark
59	File round 200 mm 2nd cut	41	200mm,Standard Quality I.S.I. / I.S.O. Mark
60	File flat 150 mm rough	42	150mm,Standard Quality I.S.I. / I.S.O. Mark
61	File flat 250 mm bastard	43	250mm
62	File flat 250 mm smooth	44	25cm,Standard Quality I.S.I. / I.S.O. Mark
63	File Rasp, half round 200 mm bastard	45	20cm bastard
64	Soldering Iron 25 watt, 65 watt, 125 watt	46	220V & copper bit,Standard Quality I.S.I. / I.S.O. Mark
65	Copper bit soldering iron 0.25 kg.	47	copper bit, Standard Quality I.S.I. / I.S.O. Mark
66	Desoldering Gun	48	desoldering gun with suck capacity,Standard Quality I.S.I. / I.S.O. Mark
67	Hand Vice 50 mm jaw	49	2inch jaw,Standard Quality I.S.I. / I.S.O. Mark
68	Table Vice 100 mm jaw	50	100mm with base fitting facility,Standard Quality I.S.I. / I.S.O. Mark
69	Pipe Cutter to cut pipes upto 5 cm. dia	51	including all accessories,Standard Quality I.S.I. / I.S.O. Mark
70	Pipe Cutter to cut pipes above 5 cm dia	52	including all accessories,Standard Quality I.S.I. / I.S.O. Mark
71	Stock and Die set for 20 mm to 50 mm G.I. pipe	53	including all accessories,Standard Quality I.S.I. / I.S.O. Mark
72	Stock and Dies conduit	54	Portable self contained,battery operated,moving coil type,anti parallax mirror scale and knife edge pointer,accuracy+-5%of the indicated value at centre scale.Range 0 to 2000 Ohms.
73	Ohm Meter; Series Type & Shunt Type	55	Standard Quality and different diameter
74	Multi Meter (analog) 0 to 1000 M Ohms, 2.5 to 500 V	56	Multimeter - Analog type Table Top Type, 0 – 3/10/30/100/300/1000V AC, 1 – 3mA, 30MA, 300mA, 10A DC, 0 – 1K, 10K, 1 M, 10 M ohm, -10 dB to + 60dB for AC Voltage, should have facility for Transistor testing, Open & Short check facility, DC Polarity reversal facility
75	Digital Multi Meter	57	Standard Quality I.S.I. / I.S.O. Mark
76	A.C. Voltmeter M.I. 0 –500V A.C	58	Portable laboratory type A.C. voltmeter (M.I. 0-500 V) house in ebonite/bakelite Body dial scale 150 mm with knife edge Pointer & antiparallex mirror Accuracy – 1 % Make- Any reputed company having ISO certrtification
77	Milli Voltmeter centre zero 100 – 0 – 100 m volt	59	Portable laboratory type A.C. voltmeter (100-0-100m V) house in ebonite/bakelite Body dial scale 150 mm with knife edge Pointer & antiparallex mirror Accuracy – 1 % Make- Any reputed company having ISO certrtification
78	D.C. Milli ammeter 0 -500m A	60	D.C Milli Ammeter center zero (0-500ma.)
79	Ammeter MC 0-5 A, 0- 25 A	61	D.C Ammeter MC0-5A,0-25A
80	A.C. Ammeter M.I. 0-5A, 0-25 A	62	moving iron type,Make- Any reputed company having ISO certrtification
81	Kilo Wattmeter 0-1-3 kw	63	dynamotype,Make- Any reputed company having ISO certrtification
82	A.C. Energy Meter, Single phase 5 amp. Three Phase 15 amp	64	single phase-220 V,three phase -440 V

83	Power Factor Meter	65	Make- Any reputed company having ISO certification
84	Frequency Meter	66	40hz-60 hz, Make- Any reputed company having ISO certification
85	Flux meter	67	Measuring range.103,104 and 5Kilo maxwell turns with 100% over range protection, indication.3 1/2 digit panel meter with 12mm LED ,Resolution. 1 Kilo maxwell turn, Accuracy.+0.5 % or full scale per minute on 10 Kilo maxwell turns range, Output.1 Kilo maxwell turn range, Input power .240V,50Hz and 25 VA, OUTPUT RESISTANCE.1 Kilo Ohms, Dimensions.210 x 05 x 225 mm
86	Wheat Stone Bridge with galvanometer and battery	68	including all accessories, Standard Quality I.S.I. / I.S.O. Mark
87	Laboratory Type Induction Coil	69	Make- Any reputed company having ISO certification
88	DC Power Supply 0-30V, 2 amp	70	including all accessories, Standard Quality I.S.I. / I.S.O. Mark
89	Rheostat 0 -1 Ohm, 5 Amp 0 -10 Ohm, 5 Amp 0- 25 Ohm, 1 Amp 0- 300 Ohm, 1 Amp	71	Make- Any reputed company having ISO certification
90	1 Phase Variable Auto Transformer	72	Make- Any reputed company having ISO certification
91	Battery Charger	73	Standard Quality I.S.I. / I.S.O. Mark
92	Hydrometer	74	Make- Any reputed company having ISO certification
93	Miniature Breaker 16 amp (Raw Material)	75	Top size min 1.5 thickness and leg size 3*3 inch
94	Working Bench 2.5 m x 1.20 m x 0.75 m	76	carbon tetra chloride gas filled only, Standard Quality I.S.I. / I.S.O. Mark
95	Fire Extinguisher CO2, 2 KG	77	red buckets with stand, Standard Quality I.S.I. / I.S.O. Mark
96	Fire Buckets	78	red buckets with stand, Standard Quality I.S.I. / I.S.O. Mark

Note: The items which are available in the market nearest of the specification as mentioned above may be

C1. FURNITURE :

97	Instructor's table	1	min 3x6feet
98	Instructor's chair	2	with arm
99	Metal Rack 100cm x 150cm x 45cm	3	100 x 150 x 45 cm
100	Lockers with 16 drawers standard size	4	Standard Quality I.S.I. / I.S.O. Mark
101	Almirah 2.5 m x 1.20 m x 0.5 m	5	2.5m x1.20m x 0.5m 22G
102	Black board/white board	6	Standard Quality I.S.I. / I.S.O. Mark 1200 x 1800 cm

LIST OF TOOLS AND EQUIPMENTS, ELECTROPLATER - SEMESTER-2

A2. TRAINEES ADDITIONAL TOOL KIT F O R 16 TRAINEES +1 INSTRUCTOR, COMMON FOR SEMESTERS 2, 3, 4

103	Canvas apron	1	Canvas
104	Respirators	2	P1 Type (> 80% Filtering Efficiency) Proper Fit Aluminum Nose Clip Comfortable Hypoallergenic Polyisoprene Head Band Folded (Flat/Triple) Electrets Media Protects Against Dust AS/NZ Approved
105	Rubber gloves	3	Rubber
106	Rubber Gum boots	4	Rubber
107	First aid box	5	18" x 18" x 10"
108	Goggles	6	Clear Glass
109	Rubber/Leather Apron	7	Leather
110	Hand vice(50mm jaw)	8	2inch jaw, Standard Quality I.S.I. / I.S.O. Mark
111	File flat 200mm, 2nd cut	9	File flat 200 mm. second cut
112	File flat 200mm smooth	10	File flat 200mm smooth
113	Cutting plier insulated 200mm	11	Cutting plier insulated 200mm
114	Brush hand scratch	12	Brush hand scratch
115	Brush circular brass	13	Brush circular brass

116	File 2nd cut half round 150mm	14	File 2nd cut half round 150mm
117	File round 2nd cut 200mm	15	File round 2nd cut 200mm
118	File round 200 mm smooth	16	File round 200 mm smooth
B2.General Machinery, Shop outfit for semester II, Electroplater			
119	Weigh Balance m/c	1	0 to 30 kg Digital
120	Hydrometer with syringe	2	Make- Any reputed company having ISO certification
121	Thermometer (0 to 100)	3	mercury type,Standard Quality I.S.I. / I.S.O. Mark
122	Glue pot	4	Mild Steel 12"
123	Oil can	5	Oil Can 0.25 liters.
124	Exhaust fan 1 phase	6	18" standard Quality I.S.I. / I.S.O. Mark
125	Work bench (2mtrs x 1.5 x 1.5 x 1m)	7	(2mtrs x 1.5 x 1.5 x 1m) Wooden
126	Oil can	8	Item at Sl.No.12 of semester I to be used
127	Voltmeter 0-30V DC Digital	9	0-30V DC Digital
128	Ammeter MC 0-300 A Digital	10	MC 0-300 A Digital
129	Ammeter MC 0-2000mA	11	MC 0-2000mA
130	Adjustable resistance board with ammeter & voltmeter	12	DC Ammeter upto 500Amp., Voltmeter DC 36 V
131	Digital Multi Meter	13	Item at Sl.No.57 of semester I to be used
132	PVC Polypropylene (PP) Vat/ Tank with SS stand for nickel , copper, brass, silver, tin,zinc, cadmium,(L- 2ft, B-1.5ft ht-1.5ft) anodizing etc	14	PVC Polypropylene (PP) Vat/ Tank L- 2ft, B-1.5ft ht-1.5ft with SS stand
133	Perforated barrel (10 kg capacity)	15	Complete With Electrical Accessories i.e motor 3HP 3Phase 440V & Starter
134	Cleaning tank (L-2ft,b- 1.5ft,ht-1.5ft)made out of hard Polypropylene (PP)	16	Hard Polypropylene L-2ft,b- 1.5ft,ht-1.5ft
135	Dust & spray proof polishing machine 1phase,250V/5A	17	Dust & spray proof polishing machine 1phase,250V/5A
136	Dust & spray proof polishing machine 3phase,440v/15A	18	Dust & spray proof polishing machine 3phase,440v/15A
137	Nickel comparator test set Digital pH meter, Table top type	19	Nickel comparator test set Digital pH meter, Table top type
138	Buffing machine with spindle and roller bearing motorised heavy duty 3 phase, 440V, 15 Amps. Bench Grinder and portable angle grinder hand type 1 phase	20	Buffing machine with spindle and roller bearing motorised heavy duty 3 phase, 440V, 15 Amps. Bench Grinder and portable angle grinder hand type 1 phase
139	Electroplating rectifiers, 3 phase,380/440V,50 c/s, AC supply,16 Volts DC with an output of 500Amps 300A, Dc voltages adjustable from 3.50 to 16 20V with voltage control 63 steps of load complete with required meter panel sand change over switch	21	Electroplating rectifiers, 3 phase,380/440V,50 c/s, AC supply,16 Volts DC with an output of 500Amps 300A, Dc voltages adjustable from 3.50 to 16 20V with voltage control 63 steps of load complete with required meter panel sand change over switch
140	AC to DC Motor Generator set for electroplating shop. Induction Motor: 3 ph, 5HP, 440V. DC Generator: 15V, 300A	22	AC to DC Motor Generator set for electroplating shop. Induction Motor: 3 ph, 5HP, 440V. DC Generator: 15V, 300A With complete electrical pannel
141	Folding desk made out wood	23	WOODEN
142	Fire extinguishers	24	Item at Sl.No.75 of semester I to be used
143	Fire extinguishers (chemical)	25	Chemical Type
144	Heating coil (copper, lead titanium /suitable material for long life) 1kw, length 10/12"	26	1kw, length 10/12"

145	Work tables (wooden) 10ft by 8ft, 5ft by 2ft	27	wooden 10ft by 8ft, 5ft by 2ft
146	Safety charts (chemical / electrical)	28	Charts chemical / electrical
147	Mechanical Air agitation unit	29	Blowers consist of a dynamically balanced impeller, which revolves in as stator-cum compression chamber having very fine clearances between them. The impeller is fitted directly on to the motor. Both the suction and pressure openings are located on the outer periphery of the stator to reduce impedance to the air flow thereby developing vacuum and pressure With complete mech. & electrical fitting
148	Centrifugal Dryer	30	Dryers are of solid construction with a strong & heavy base of Casting. The Body is of sheet metal. The Flywheel and the Perforated Basket are balanced to reduce vibrations. Heating is provided with Elements, which can be easily replaced. The lid is interlocked with the Foot Pedal, which cuts off power supply to the Motor & Heaters.
149	Cartridge solution filter	31	MULTIPLE CARTRIDGE FILTER In this Unit, a Magnetic Sealless Pump of higher capacity is coupled with a Chamber of Polypropylene. The Filter Media consists of 4 nos of Filter Cartridge of 20" length. Unit is mounted on Trolley. Different combinations of Cartridge size & Qty's can be offered with suitable Pump capacity based on Customers requirement.
150	Plastic siphon 12mm dia	32	12mm Dia.
151	Hull cell unit (complete set for chemical analysis)	33	normally in range of 10 volt / 10 Amps output. These are single-phase models, with Digital Ammeter & Voltmeter and are Air Cooled. These can be provided with Timers, Constant Voltage Constant Current features as desired.
152	BNF jet test apparatus Salt spray testing chamber for quality testing of plated surface.	34	Double walled chamber reinforced with glass wool insulation High-pressure resistant drum Air regulator with moisture cum oil filter Air Regulator range : 0-30 psi Fully Programmable Microprocessor based controls Touch-screen operator control interface. Temperature range: Ambient to 70 C Temperature Accuracy: + 0.5 C Low loading threshold for loading and unloading. Large capacity floor standing salt solution reservoir.

C2. WORKSHOP FURNITURE common for 2, 3, 4 semesters:

153	Instructor's table	1	Item at Sl.No.1 furniture of semester I to be used
154	Instructor's chair	2	Item at Sl.No.2 furniture of semester I to be used
155	Metal Rack 100cm x 150cm x 45cm	3	Item at Sl.No.3 furniture of semester I to be used
156	Lockers with 16 drawers standard size	4	Item at Sl.No.4 furniture of semester I to be used
157	Steel Almirah 2.5 m x 1.20 m x 0.5m	5	Item at Sl.No.5 furniture of semester I to be used
158	Black board/white board	6	Item at Sl.No.6 furniture of semester I to be used
159	Wooden rack standard size	7	wooden
160	Wooden table 5 ft x 5ft	8	5 ft x 5ft

A3. TRAINEES ADDITIONAL TOOL KIT for 16 TRAINEES +1 INSTRUCTOR, COMMON FOR SEMESTERS 2, 3, 4 is to be used

B3.General Machinery, Shop outfit for semester III, Electroplater

161	Weigh Balance m/c	1	Item at Sl.No 1 of semester II is to be used
162	Hydrometer with syringe	2	Item at Sl.No 2 of semester II is to be used
163	Thermometer (0 to 100)	3	Item at Sl.No 3 of semester II is to be used
164	Glue pot	4	Item at Sl.No 4 of semester II is to be used

165	Oil can	5	Item at Sl.No 5 of semester II is to be used
166	Exhaust fan 1 phase	6	Item at Sl.No 6 of semester II is to be used
167	Work bench	7	Item at Sl.No 7 of semester II is to be used
168	Oil can	8	Item at Sl.No.12 of semester I to be used
169	Voltmeter 0-30V DC Digital	9	Item at Sl.No 9 of semester II is to be used
170	Ammeter MC 0-300 A Digital	10	Item at Sl.No 10 of semester II is to be used
171	Ammeter MC 0-2000mA	11	Item at Sl.No 11 of semester II is to be used
172	Adjustable resistance board with ammeter & voltmeter	12	Item at Sl.No 12 of semester II is to be used
173	Digital Multi Meter	13	Item at Sl.No.57 of semester I to be used
174	PVC Polypropylene (PP) Vat/ Tank with SS stand for nickel , copper, brass, silver,tin,zinc,cadmium,(L- 2ft, B-1.5ft ht-1.5ft) anodizing etc	14	Item at Sl.No.14 of semester II to be used
175	Chromium plating tank made out of Antimonial lead lining with reinforced glass lining. , L- 2ft,b-1.5ft,ht-1.5ft	15	Antimonial lead lining with reinforced glass lining. , L- 2ft,b-1.5ft,ht-1.5ft
176	Perforated barrel (10 kg capacity)	16	Item at Sl.No 15 of semester II is to be used
177	Cleaning tank (L-2ft,b- 1.5ft,ht-1.5ft)made out of hard Polypropylene (PP)	17	Item at Sl.No 16 of semester II is to be used
178	Dust & spray proof polishing machine 1phase,250V/5A	18	Item at Sl.No 17 of semester II is to be used
179	Dust & spray proof polishing Machine 3phase,440v/15A	19	Item at Sl.No 18 of semester II is to be used
180	Buffing machine with spindle and roller bearing motorised heavy duty 3 phase,440V, 15 Amps. Bench Grinder and portable angle grinder hand type 1 phase	20	Item at Sl.No 20 of semester II is to be used
181	Electroplating rectifiers, 3 phase,380/440V,50 c/s, AC supply,16 Volts DC with an output of 500Amps 300A, Dc voltages adjustable from 3.5 0 to 16 20V with voltage control 63 steps of load complete with required meter panel sand change over switch	21	Item at Sl.No 21 of semester II is to be used
182	Folding desk made out wood	22	Item at Sl.No 23 of semester II is to be used
183	Fire extinguishers	23	Item at Sl.No.75 of semester I to be used
184	Fire extinguishers (chemical)	24	Item at Sl.No 25 of semester II is to be used
185	Heating coil (copper, lead titanium /suitable material for long life) 1kw, length 10/12"	25	Item at Sl.No 26 of semester II is to be used
186	Work tables (wooden) 10ft by 8ft, 5ft by 2ft	26	Item at Sl.No 27 of semester II is to be used
187	Safety charts (chemical / electrical)	27	Item at Sl.No 28 of semester II is to be used
188	Mechanical Air agitation unit	28	Item at Sl.No 29 of semester II is to be used
189	Centrifugal Dryer	29	Item at Sl.No 30 of semester II is to be used
190	Cartridge solution filter	30	Item at Sl.No 31 of semester II is to be used
191	Plastic siphon 12mm dia	31	Item at Sl.No 32 of semester II is to be used
192	Hull cell unit (complete set for chemical analysis)	32	Item at Sl.No 33 of semester II is to be used
C3. WORKSHOP FURNITURE common for 2, 3, 4 semesters:			
193	Instructor's table	1	Item at Sl.No.1 furniture of semester I to be used

194	Instructor's chair	2	Item at SI.No.2 furniture of semester I to be used
195	Metal Rack 100cm x 150cm x 45cm	3	Item at SI.No.3 furniture of semester I to be used
196	Lockers with 16 drawers standard size	4	Item at SI.No.4 furniture of semester I to be used
197	Steel Almirah 2.5 m x 1.20 m x 0.5 m	5	Item at SI.No.5 furniture of semester I to be used
198	Black board/white board	6	Item at SI.No.6 furniture of semester I to be used
199	Wooden rack standard size	7	Item at SI.No.7 of semester I to be used
200	Wooden table 5 ft x 5ft	8	Item at SI.No.8 of semester to be used

LIST OF TOOLS AND EQUIPMENTS, ELECTROPLATER - SEMESTER-4

A4. TRAINEES ADDITIONAL TOOL KIT f o r 16 TRAINEES +1 INSTRUCTOR, COMMON FOR SEMESTERS 2, 3, 4 is to be used

B4.General Machinery, Shop outfit for semester IV, Electroplater

201	Weigh Balance m/c	1	Item at SI.No.1 of semester II to be used
202	Hydrometer with syringe	2	Item at SI.No.2 of semester II to be used
203	Thermometer (0 to 100)	3	Item at SI.No.3 of semester II to be used
204	Glue pot	4	Item at SI.No.4 of semester II to be used
205	Oil can	6	Item at SI.No.5 of semester II to be used
206	Exhaust fan 1 phase	7	Item at SI.No.6 of semester II to be used
207	Work bench	8	Item at SI.No.7 of semester II to be used
208	Oil can	9	Item at SI.No.12 of semester I to be used
209	Voltmeter 0-30V DC Digital	10	Item at SI.No.9 of semester II to be used
210	Ammeter MC 0-300 A Digital	11	Item at SI.No.10 of semester II to be used
211	Ammeter MC 0-2000mA	12	Item at SI.No.11 of semester II to be used
212	Adjustable resistance board with ammeter & voltmeter	13	Item at SI.No.12 of semester II to be used
213	Digital Multi Meter	14	Item at SI.No.57 of semester I to be used
214	PVC Polypropylene (PP) Vat/ Tank with SS stand for nickel , copper, brass, silver,tin,zinc,cadmium,(L- 2ft, B-1.5ft ht-1.5ft) anodizing etc	15	Item at SI.No.14 of semester II to be used
215	Perforated barrel (10 kg capacity)	16	Item at SI.No.15 of semester II to be used
216	Cleaning tank (L-2ft,b- 1.5ft,ht-1.5ft)made out of hard Polypropylene (PP)	17	Item at SI.No.16 of semester II to be used
217	Dust & spray proof polishing machine 1phase,250V/5A	18	Item at SI.No.17 of semester II to be used
218	Dust & spray proof polishing Machine 3phase,440v/15A	19	Item at SI.No.18 of semester I to be used
219	Buffing machine with spindle and roller bearing motorised heavy duty 3 phase, 440V, 15 Amps. Bench Grinder and portable angle grinder hand type 1 phase	21	Item at SI.No.20 of semester I to be used
220	Electroplating rectifiers, 3 phase,380/440V,50 c/s, AC supply,16 Volts DC with an output of 500Amps 300A, Dc voltages adjustable from 3.5 0 to 16 20V with voltage control 63 steps of load complete with required meter panel sand change over switch	22	Item at SI.No.21 of semester I to be used
221	Folding desk made out wood	24	Item at SI.No.23 of semester I to be used
222	Fire extinguishers	25	Item at SI.No.75 of semester I to be used
223	Fire extinguishers (chemical)	26	Item at SI.No.25 of semester I to be used
224	Heating coil (copper, lead titanium /suitable material for long life) 1kw, length 10/12"	27	Item at SI.No.26 of semester I to be used

225	Work tables (wooden) 10ft by 8ft, 5ft by 2ft	28	Item at SI.No.27 of semester I to be used
226	Safety charts (chemical / electrical)	29	Item at SI.No.28 of semester I to be used
227	Centrifugal Dryer	31	Item at SI.No.30 of semester I to be used
228	Cartridge solution filter	32	Item at SI.No.31 of semester I to be used
229	Plastic siphon 12mm dia	33	Item at SI.No.32 of semester I to be used
230	Hull cell unit (complete set for chemical analysis)	34	Item at SI.No.33 of semester I to be used
231	BNF jet test apparatus Salt spray testing chamber for quqlity testing of plated surface.	35	Item at SI.No.34 of semester I to be used

C4. WORKSHOP FURNITURE common for 2, 3, 4 semesters to be used:

232	Instructor's table	1	Item at SI.No.1 furniture of semester I to be used
233	Instructor's chair	2	Item at SI.No.2 furniture of semester I to be used
234	Metal Rack 100cm x 150cm x 45cm	3	Item at SI.No.3 furniture of semester I to be used
235	Lockers with 16 drawers standard size	4	Item at SI.No.4 furniture of semester I to be used
236	Steel Almirah 2.5 m x 1.20 m x 0.5 m	5	Item at SI.No.5 furniture of semester I to be used
237	Black board/white board	6	Item at SI.No.6 furniture of semester I to be used
238	Wooden rack standard size	7	Item at SI.No.7 of semester II to be used
239	Wooden table 5 ft x 5ft	8	Item at SI.No.8 of semester II to be used