

Syllabus for the trade
of

GOLD SMITH

(SEMESTER PATTERN)

Under

CRAFTSMAN TRAINING SCHEME(CTS)

Designed in: 2013

By

Government of India
CENTRAL STAFF TRAINING AND RESEARCH INSTITUTE
Directorate General of Employment & Training
Ministry of Labour & Employment
EN-81, SECTOR-V, SALT LAKE CITY
KOLKATA-700091

List of Members of Trade committee Meeting for the trade of **GOLDSMITH** Held on 10th & 11th June'2010 at Central Staff Training and Research Institute, Salt lake, Kolkata.

SL. NO.	NAME & DESIGNATION S/SHRI	REPRESENTING ORGANIZATION	REMARKS
1.	S. D. Lahiri, Director	DGET, ND	Chairman
2.	R. N. Bandopadhyay, Jt. Director of Trg.	ATI-Kolkata, Dasnagar, Howrah	Member
3.	Asim Roy, Skilled Craftsman & Owner	A.Roy Jewellery, Barrackpore	Member
4.	Chandresh Soni, Managing Director	Jewel Cast Techno, Ahmedabad	Member
5.	Bivesh Ch. Maity General Secretary	Bangiya Swarna Shilpi Samiti Karol Bagh, New Delhi	Member
6.	Anup Ghoshal Executive Member	Bangiya Swarna Shilpi Samiti, Kolkata	Member
7.	Tagar Ch. Podder, General Secretary	Bangiya Swarna Shilpi Samiti, Kolkata	Member
8.	Sadhan Ch. Shee, Asst. Genl. Secretary	Bangiya Swarna Shilpi Samiti	Member
9.	Shashi Bhushan Sen, Secretary	Bangiya Swarna Shilpi Samiti	Member
10.	Chitta Ranjan Karmakar, Working President	Bangiya Swarna Shilpi Samiti	Member
11.	Bimal Roy, Vice-President	Bangiya Swarna Shilpi Samiti	Member
12.	Baidyanath Roy, Skilled Craftsman	Bangiya Swarna Shilpi Samiti	Member
13.	Himanshu Debnath, Skilled Craftsman	Bangiya Swarna Shilpi Samiti	Member
14.	Prabir Roy, Skilled Craftsman	Bangiya Swarna Shilpi Samiti	Member
15.	Goutam Debnath, Skilled Craftsman	Bangiya Swarna Shilpi Samiti	Member
16.	Ragavendran D	Titan Industries Ltd.	Member
17.	Ms. Nita Mukhopadhyay, Manager	SENCO Gold Ltd.	Member
18.	Tapas Bhakta, Skilled Craftsman & Owner	Aparna Jewellers Naihati	Member
19.	Ranjit Bebnath, Skilled Craftsman & Owner	B. D Jems & Jewellers Pvt. Ltd., Kolkata	Member
20.	Subrata Kar, Skilled Craftsman & Owner	Kar Jewellers, Kolkata	Member
21.	Gopinath Basak, , Skilled Craftsman	Kar Jewellers, Kolkata	Member
22.	Rintu Purkait, Designer	Dasnagar, Howrah	Member
23.	P. K. Ghosh, Managing Director	ESCO DIE CASTING (P) Ltd. Kolkata	Member
24.	S. K. Paul, Director	A. Paul & Co. Kolkata	Member
25.	Ratan Kumar Talukder,, Skilled Craftsman	24/15, A. K. Mukharjee Road, Kol-90	Member
26.	Uttam Das, Skilled Craftsman	272, R. N. Thakur Road, Kol-77	Member
27.	Rabin Debnath, Asst. Director of Industrial Trg.	DIT, Govt. of West Bengal, Kolkata	Member
28.	Anil Kumar, Jt. Director of Industrial Trg.	CSTARI, Kolkata	Member
29.	M. C. Sharma, Jt. Director of Industrial Trg.	CSTARI, Kolkata	Member
30.	L. K. Mukharjee, Dy. Director of Industrial Trg.	CSTARI, Kolkata	Member
31.	P. K. Dutta, Asst. Director of Industrial Trg.	CSTARI, Kolkata	Member
32.	R. N. Manna, Training Officer	CSTARI, Kolkata	Member
33.	P. Biswas, Jr. D/Man	CSTARI, Kolkata	Member

List of members attended the Workshop to finalize the syllabi of existing CTS into Semester Pattern held from 6th to 10th May'2013 at CSTARI, Kolkata.

Sl. No.	Name & Designation	Organisation	Remarks
1.	R.N. Bandyopadhyaya, Director	CSTARI, Kolkata-91	Chairman
2.	K. L. Kuli, Joint Director of Training	CSTARI, Kolkata-91	Member
3.	K. Srinivasa Rao, Joint Director of Training	CSTARI, Kolkata-91	Member
4.	L.K. Muhkerjee, Deputy Director of Training	CSTARI, Kolkata-91	Member
5.	Ashoke Rarhi, Deputy Director of Training	ATI-EPI, Dehradun	Member
6.	N. Nath, Assistant Director of Training	CSTARI, Kolkata-91	Member
7.	S. Srinivasu, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
8.	Sharanappa, Assistant Director of Training	ATI-EPI, Hyderabad-13	Member
9.	Ramakrishne Gowda, Assistant Director of Training	FTI, Bangalore	Member
10.	Goutam Das Modak, Assistant Director of Trg./Principal	RVTI, Kolkata-91	Member
11.	Venketesh. Ch. , Principal	Govt. ITI, Dollygunj, Andaman & Nicobar Island	Member
12.	A.K. Ghate, Training Officer	ATI, Mumbai	Member
13.	V.B. Zumbre, Training Officer	ATI, Mumbai	Member
14.	P.M. Radhakrishna pillai, Training Officer	CTI, Chennai-32	Member
15.	A.Jayaraman, Training officer	CTI Chennai-32,	Member
16.	S. Bandyopadhyay, Training Officer	ATI, Kanpur	Member
17.	Suriya Kumari .K , Training Officer	RVTI, Kolkata-91	Member
18.	R.K. Bhattacharyya, Training Officer	RVTI, Trivandrum	Member
19.	Vijay Kumar, Training Officer	ATI, Ludhiana	Member
20.	Anil Kumar, Training Officer	ATI, Ludhiana	Member
21.	Sunil M.K. Training Officer	ATI, Kolkata	Member
22.	Devender, Training Officer	ATI, Kolkata	Member
23.	R. N. Manna, Training Officer	CSTARI, Kolkata-91	Member
24.	Mrs. S. Das, Training Officer	CSTARI, Kolkata-91	Member
25.	Jyoti Balwani, Training Officer	RVTI, Kolkata-91	Member
26.	Pragna H. Ravat, Training Officer	RVTI, Kolkata-91	Member
27.	Sarbojit Neogi, Vocational Instructor	RVTI, Kolkata-91	Member
28.	Nilotpal Saha, Vocational Instructor	I.T.I., Berhampore, Murshidabad, (W.B.)	Member
29.	Vijay Kumar, Data Entry Operator	RVTI, Kolkata-91	Member

GENERAL INFORMATION

1. Name of the trade : **Gold Smith**
2. N. C. O. Code No. : 7313.28
3. Duration : One Year (Two semester)
4. Power Norms : 5 KW (approx.)
5. Space Norms : 48 sq. met.
6. Entry Qualification : Passed 8th class Examination
(Minimum age 14 years)

7. Unit Size (No. of Student) : 16

- 8 a. **Instructor's/Trainer's Qualification:**
 1. Theory: - Degree in appropriate branch in engineering viz Metallurgy/Mechanical from any recognized University or equivalent with one year experience in the relevant field.
OR
Diploma in appropriate branch in engineering viz Metallurgy/Mechanical from any recognized Institute / board or equivalent with two years experience in the relevant field.
 2. Practical: - NTC / NAC in the relevant trade with three years experience in the relevant field (which will evolve in future).
OR
For practical purpose: Contract faculties with 8 to 10 years experience in the relevant field may be appointed.

- 8 b. Desirable qualification: Preference will be given to a candidate with Craft Instructor Certificate (CIC).

Note: At least one Instructor must have Degree/Diploma in relevant field.

Metal to be used: Silver- copper alloy / any other suitable materials to impart training

SYLLABUS FOR THE TRADE OF “GOLD SMITH” UNDER C.T.S DURATION: Six Months

FIRST SEMESTER

(Semester Code No.GOM-01)

Week Nos.	Trade Practical	Trade Theory	Engg. Drawing	Workshop Science & Cal.
1.	Introduction to the trade and familiarization with the Institute. All necessary guidance to be provided to the new comers to be familiar with the working in Institute including Store Procedures. Importance of safety and general precautions observed in the section. Introduction of first aid and safety kits, safety equipments, operation of fire extinguisher.	Importance of the trade in the development of Economy of the country through MSME Related subjects to be taught, achievement to be made, recreation, medical facilities and other extra curricular activities of the Institute. Introduction to occupational health hazard. Environmental pollution -sources, causes, consequences, mitigation and controls. Introduction to pollution control.	Importance of drawing and its knowledge use of Set Squares or Mini Drafter and other drawing instruments.	Importance of Science and Calculation to the trade skill and fundamental of Arithmetical operations: - Addition, Subtraction, multiplication and Division – related problems.
2.	Types of work done by the trainees in the trade. Familiarization with the tools, equipments and machineries used in the trade. Care and maintenance of equipments and materials.	Gold mines in India and abroad. Availability of gold. Knowledge of different raw materials used in Gold Smith Industry. Steel rule – Inch and meter. Conversion of inch to mm. and vice versa.	Lines – Straight, free hand drawing of Triangle, Square and Rectangle.	----- Do -----
3.	Allied Trade Training Fitting- Use of vice clamps, holding job in the vice and practice of metal sawing with hacksaw and filing the edges maintaining flatness and squareness of all the faces, marking practice use of odd leg caliper, surface gauge, try-square, marking table, etc.	Introduction and use of different job holding device and marking tools in the Gold Smith trade.	Lines – curved, free hand drawing of circles, arcs.	Decimal and Fraction – related problems.
4.	Filing flat surface and checking flatness and squareness. Filing four edges, checking all dimensions. Use of Zero cut, 2 nd cut. Making of various shapes.	Files – their types, grades, cut, convexity, specifications, their use and care.	Free hand drawing of polygon and ellipse.	Multiplication and Division of Decimal and Fraction – related problems.

5.	Marking of parallel lines (straight and curved), circles, and arcs. Practice of angular filing and checking with gauge. Making of various shapes.	Hacksaw frames and blades – their uses.	Geometrical construction of different Triangle.	---- Do ----
6.	Threading practice:- (1) Drilling on plate for tapping. (2) Tapping practice. (3) Dieing Practice.	Description and Specification to different types of Hammers.	--- Do ---	Conversion of Decimal to Fraction and vice versa – related problems.
7.	Weighing practice by using physical balance and electronic weighing machine. Precautionary measures to be observed.	Knowledge of extracting pure Gold from ore. Knowledge of fired Pit furnace	--- Do ---	Unit and Dimensions used in the country.
8.	Practice on melting and alloying of metals. Use of carbon rod for stirring. Safety precautions to be observed during melting and alloying. Procedure of fire prevention and fire control originated from Gas and Electric. Safety equipments and their uses. Lighting and adjustment of flames. Pouring metal in ingot. Casting of molten metal as bar.	Calculation of tap drill size. Tap & Dies. Drills, their size and nomenclature	Geometrical construction of squares and rectangles	Mass & Weight related calculation to the trade.
9	Method of making wire from bar (by machine and hand) Practice of wire making both by machine and hand. Checking the diameter of wire with micrometer and wire gauge.	Knowledge of the term carat. Different materials added with Gold to make alloy. Percentage of alloying element to make Gold of different carat (e.g. 22, 20, 18 etc.)	Geometrical construction of squares and rectangles	Metals, Non-metals and Alloys – their properties and uses.
10.	Method of making sheet from bar (by machine and hand). Practice of sheet making by machine and hand. Practice to adjust the gap of rollers of the rolling machine. Checking thickness of sheet by micrometer.	Calculation of different alloying elements according to quality of gold. Knowledge on Hallmark. Different process of melting Gold and metals used as an alloy. Melting temperature of different materials	Geometrical construction of circles and arcs, Segments, etc.	---- Do ---
11.	Practice on measuring and marking wire and sheets as per design. Practice on cutting as	Different metal forming techniques used in the jewellery	Geometrical construction of polygon.	Percentage – related calculation to the trade.

	per marking.	making like Engraving, Embossing, doming, bending, wire work, forging, etc.		
12.	Practice to provide desired shape to wires and sheets as per design.	Assaying analysis of Gold and/or other metals.	Geometrical construction of polygon.	-----Do-----
13.	<u>Stamping, Punching, Die Punching.</u> Selection of die and punch as per the required shape, size and design. Practice of preparing desired shape and size in required design by stamping and punching.	Micrometer – construction, principle and use.	Geometrical construction of ellipse, parabola, etc.	-----Do-----
14.	<u>Ball making.</u> Measuring, Setting of gauges, cutting of strips, making oval shapes, joining two oval shaped halves, making a ball, rubbing to bring in perfect round and cleaning.	Least count, method of taking measurement by micrometer. Practice of taking measurement using micrometer.	-----Do-----	Physical properties of metals- malleability, ductility, elasticity, etc.
15.	<u>Chain Making.</u> Measuring, cutting in required length, setting of gauges, Bending of wire in required shape, joining of pieces to make chain.	Different gauges and tools used in the trade for measuring and marking.	Knowledge of computer operating and name of different parts and its components, accessories. Knowledge about the Start Menu and Shut Down Menu. Practice to operating computer	--- Do ---
16.	Practice of thread making (Internal & External), different types of joint making.	Different cutting tools used in the trade.	Definition of a file; File names. Knowledge about “My Computer” and “My Documents”. Practice to operating computer	Ratio and proportions – related calculation to the trade.
17.	Process of making ring as per design and shape and size. Cavity making. Process of making cavity according to shape and size of stone, etc. Practice of kundan work	Knowledge on different tools used to provide desired shape to wires and sheets	Microsoft – Word Processing Package Text selection Opening Documents and Creating Documents Saving Documents /	-----Do-----

			Quitting Documents Cursor Control	
18.	<u>Laying on wax/resin sheet and assembling.</u> Process of laying different components on wax/resin as per the drawing/design. Process of taking components as arranged on plaster of paris.	Knowledge of Die and Punch, Core and Cavity.	Printing Documents Using the Interface (Menu, Toolbars) Editing Text (copy, Delete, Move etc.)	-----Do-----
19.	<u>Brazing.</u> Process of brazing of the components taken on plaster of paris, Brazing of dissimilar metals.	Solders:- Composition of different materials in solder. Soldering processes – Knowledge on different soldering processes.	Finding and Replacing Text Spell Check Feature/Auto correct Feature, Grammar Facility Autotext.	Chemical properties of metals
20.	<u>Soldering.</u> Process of soldering of the components and practice	Knowledge of Brazing and different process of brazing.	Character formatting, and page formatting. Practice on MS Paint brush.	Volume and density of metals – related calculation to the trade. Density of gold in different carat.
21.	<u>Stringing of beads/ball</u> Different processes of stringing of beads/balls and practice	Equipments & tools used in soldering and brazing (e.g. Gas Burner, Blow pipe, etc.) lighter.	Practice on MS Paint brush.	--- Do ---
22.	Practice of making of hollow tubes. Filling of thin walled tubes with dummy material e.g. resin. Bending of thin walled filled tubes.	Different process of making cavity.	--- Do ---	Mensuration: - Square and rectangles- their area and perimeter.
23 & 24	Buffing, Polishing, Finishing and drying. Process of buffing ornaments, care to be taken while buffing. Process of Polishing and finishing and practice.	Different materials used in meenakari.	Knowledge on ornament design Free hand design practice of ornament.	Specific Gravity and Archimedes principle- related calculation.
25	Project work / Industrial visit(optional)			
26	Examination			

SYLLABUS FOR THE TRADE OF GOLD SMITH UNDER C.T.S
DURATION: Six Months

SECOND SEMESTER

(Semester Code No.GOM-02)

Week Nos.	Trade Practical	Trade Theory	Engg. Drawing	Workshop Science & Calculation
1.	Pattern making with molten wax. Procedure of filling wax in the pattern. Mould making with plaster of paris with the help of wax pattern. Melting Gold and casting in the mould, cleaning of moulded components.	How to prepare Enamels. Different application method used in Meenakari.	Free hand design practice of ornament.	Mensuration :- Triangles, Isosceles, equilateral, Right angled, etc. – their area and perimeter.
2.	<u>Enameling. (Meenakari)</u> Process of grinding, sieving, washing, painting and heating.	Faults in Gas burners, their effects, causes and correction.	Free hand design practice of ornament.	-----Do-----
3.	<u>Electro plating (deposition or removal)</u> Process of Rhodium, use of steam m/c, practice on Electro Rhodium process, Process of handling acids. Care to be taken during handling of acids. Striping of gold / rhodium.	Threads and joints used in Gold Smith trade.	Practice to operate computer. Knowledge of computer aided design	Pythagoras theorem. Properties of triangles- related calculation.
4.	<u>Scraping, cutting.</u> Setting of m/c to scrap/cut as per design. Setting of Indexing head, scraping/ cutting as per design. Filing to remove sharpness. Technique of cleaning files. Method of making and use of emery mandrels, emery sticks, Emery bonds of 120,180,400,600,800 and pink emery papers.	Process of melting wax. Melting temperature of wax, different methods of filling wax in the pattern removal of Blow holes.	Knowledge on computer aided design Demonstration and practice on Jewelry designing through software.	Refractory material – Silica sand, Bricks, Mica (Abhra), use of refractory material in the trade.
5.	<u>Engraving, Embossing.</u> Practice on different process of Engraving and Embossing as per design and final weighing.	Methods to fill molten Gold in the mould, removal of blow holes.	-----Do-----	Mensuration – Circles, area, circumference-related calculation.
6.	<u>Setting and crimping.</u> Process of setting stone on the cavity and crimping.	Ingredients used during polishing	-----Do-----	Mensuration – Circles, area, circumference-related calculation
7.	Handling of Acids and aqua-regia. Process of extracting Gold and other precious metal from scrap or old ornaments.	Knowledge on materials used in Rhodium process – e.g. Rhoduna-SL-P. Different Acids used in Rhodium process and	Designing different jewellery / ornaments by applying Jewelry designing software.	Heat and Temperature:- definition, different scales of temperature their conversion and

		their usefulness. Knowledge on health hazards caused from acids.		related problems
8.	<u>Estimation and Costing.</u> Estimating amount of Gold and other material required to make an ornament of desired shape and size. Procedure to calculate cost of an ornament of desired metal, shape and size.	Necessity of jewelry filing and use of different types of jewellery files. Necessity of Emery polish and use of different kind of emery papers used.	-----Do-----	---- Do ----
9 & 10.	Making of ear rings with hooks in different designs	Use of dust collector. Techniques for collection of dust during filing, scraping, etc.	-----Do-----	Effect of heat on different metals. Mode of heat transfer—conduction, convection etc.
11.	Making of ear rings with threads in different designs	Knowledge on different process of engraving and embossing.	Reading of Gold Smith catalogue.	Calculation of weight of metal required for making specific length and dia/thick of wire on sheet.
12 to 13.	Making of finger rings of different shapes, sizes and designs with plain top.	Knowledge of different tools and machineries used in engraving and embossing operation.	Revision	Elasticity of metals – modulus of elasticity
14 to 15.	Making of finger rings of different shapes, sizes and designs with stone setting on top.	Knowledge on properties and qualities of different stones.	Revision	Cone, Frustum, Sphere, Spherical Segment – related calculation to trade
16.	Making of bangles of different designs on solid plate.	Precaution to be observed while working with aqua-regia, occupational health hazards of the trades, causes, and remedies.	Revision	-----Do-----
17 to 19.	Making of hollow tube bangles of different designs filled with dummy materials	Knowledge of Estimation and Costing of an ornament as per given design.	Revision	Revision
20 to 21	Making of pendants of different designs with loop.	----- Do -----	Revision	Revision
22	Making of chains of different designs with loop and ‘S’ type hook.	Revision	Revision	Revision
23 & 24	Making of necklace of different designs with loop	Revision	Revision	Revision

	and 'S' type hook.			
25	Revision			
26	Examination			

**TRADE : GOLDSMITH
LIST OF TOOLS AND EQUIPMENTS**

A. TRAINEES TOOL KIT FOR 16 TRAINEES

SL. NO.	Name of the items	QUANTITY
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1.	6" 2 – cut file (Flat, Half Round, Square, Triangle and round)	16 nos. each
2	Needle file	1 set
3.	Zero cut file	1 set
4.	File cleaning brush	4 nos.
5	Hand Hack Saw Frame with blade 6 inch and 1ft. blade	16 nos.
6	Drawing Bush-No. 3 & 5	As required
7	Ring clamp with screw	4 nos.
8	Ring mandrel	4 nos.
9.	Set Square 30°, 60° & 45°	4 nos. each
10.	Cutting Pliers (Small, Med, Big.)	4 nos. each
11.	Nose Plier small	16 nos.
12.	Gold Smith File set (a set of 10 nos.)	16 sets
13.	Divider	16 nos.
14.	Compass	16 nos.
15	Steel rule 6"	16 nos.
16	Table lamp	8 nos.
17	Blow pipe, soldering torch	16 nos.
18	Dust mask	4 nos.
19	Burnisher straight & curve	1 no. each
20.	Degree gauge (Angle Gauge)	2 nos.
21.	Optivisor	16 nos.
22.	Apron	16 nos.
23	Tripoli & Rouge (common)	16 no. each
24	Felt buff and stick	2 nos. each
25	Small buff-yellow and white	2 nos. each
26	Prepolish wheels-hard and soft	2 sets each
27	Centre punch	16 nos.
28	Steel square & ruler	16 nos. each
29	Bench Block	1 no.
30	Ceramic soldering board	1 no.
31	Ring clamp with screw (Wooden)	1 no.
32	Ring clamp with Wedge	1 no.
33	Steel square	1 no.
34	Steel rule 12"	1 no.
35	Scriber	1 no. each
36	Ring size stick	1 no.
37	Ring size bunch	1 no.
38	Tweezers	1 no. each
39	Wooden hammer (mallet)	1 no.
40	Tweezers – straight, self lock (straight & bent)	1 no. each
41	Soldering pick	1 no.
42	Burner small	16 nos.
43	Job Holder	16 nos.
44	Gauge-Finger	1 set
45	Ring Rod (4 Sizes)	2 nos. each
46	Forceps	16 nos.
47	Hammer 1 kg, 0.5 kg, 100 gm, 50 gm, 10 gm.	4 nos. each

48	Boxes, small, med	16 sets
49	Goggles	16 nos.
50	Gloves	16 pairs
51	Pin vice	4 nos.
52	Ball & cross burr	2 nos. each
53	Gauge – Bangles	1 set
54	Bangle Rod (2", 2 ½ ", 3", 3 ½ ", 4")	2 nos. each
55	Flask	4 nos.
56	Bowl	32 nos.
57	Hydrometer	4 nos.
	B. MACHINES	
1.	Sheet Rolling Machine 8" and 5" (manual)	1 no. each
2.	Wire drawing machine 8" and 5" (manual)	1 no. each
3.	Iron Anvil with wooden block 2.5" to 3" sq.	2 nos.
4.	Work Bench block	16 nos.
5.	Die cutter	4 sets
6.	Wire drawing die (assorted 6 in a set)	3 sets
7.	Plier – Med.(for wire drawing)	16 nos.
8.	Kanchla (Die)	16 nos.
9.	Iron Rod 18",	16 nos.
10.	Press Plate 4",	24 nos.
11.	Diamond Cutting Machine- 1 ½ H.P.	2 nos.
	a) Tools assorted 16 min.	16 sets
12.	Hand Engraving machine	2 nos.
13.	Ball making M/C (manual)	2 nos.
	a) Chakki – Top x Bottom	2 sets
	b) Buffalo horn Tokna-kill	2 sets
14.	Die Punch M/C with die sets 5 ton and 1 ton	1 no each
15.	Die press (casting) 0.5 ton and 1 ton	1 no each
16.	Steam Generator Autoclave	1 no.
17.	Ultrasonic cleaning machine 250 watt 9 litre capacity	1 no.
18.	Steam Cleaner 10 ltr.	1 no.
19.	Polishing machine with dust collector 1 HP	2 nos.
20.	Magnetic polisher 500 gm.	1 nos.
21.	Flexible shaft motor	2 nos.
22.	Buffing machine	1 no.
23.	Vacuum polisher	1 no.
24.	Faceting machine	1 no.
25.	Furnace – 1 KW, 1200° C	1 nos.
	a) Crucible – (10, 20, 50 and 100 gm.)	4 nos. each
	b) Long tongue	2 nos.
	c) Carbon rod	2 nos.
	d) Reza (8", 10", 12", 16")	2 pcs. each
26.	Engraving Tool manual	16 nos.

27	Wax Injection Moulding 2 kg wax capacity	1 nos.
28	Burn out Furnace 2.5 KVA	1 no
29	Casting vacuum M/C for Plaster of paris 2 H.P.	2 nos.
30	Electro plating Bath (gold and rhodium) with temperature control medium size	1 set
31	Plating unit : Rectifier	1 no.
32	Heater	2 nos.
33	Platinised titanium plate	2 sets
34	Enamelling Hemal Zista	16 sets
35	Mortar & pestle	16 sets
36	Vulcanizer with timer and temperature control	1 no.
	C. COMPUTER HARDWARE & SOFTWARE	
1.	Latest version computer with all necessary accessories	04 nos.
2	Laser printer	01 nos.
3.	1 KVA off line UPS with 30 mins. Back up	04 nos.
4.	WINDOWS - XP	02 nos.
5	MS office - XP	02 nos.
6.	Software package for Jewellery Design(latest version) educational version	1 no
7.	Designing books & CD	As required
8	Computer chair & Table	4 nos. each
9.	Printer table	1 no.
10.	White Board	1 no.
	D. FURNITURE	
1	Steel cup board medium	As required
2	Lockers for students	As required
3	Working Table (3ft.x2ft.x1ft. high) for Gold Smith	1 no. for each student
4	Chairs and Tables for classroom	As required
5	Chairs and Tables for faculties	As required
	E.CONSUMABLES	
1.	Silver grains/any other suitable alloy	100 gm
2.	Copper	300 gm
3.	Solder-medium	As required
4	Solder – soft	As required
5.	Silicon cylinder	As required
6.	Bristle end brush	As required
7.	Drill bits Of different sizes	10 each
8.	Mandrels-Emery, screw, threaded	5 each
9.	Flux dish	As required
10.	Flux	50 gm
11.	Plaster of paris	3 kg
12	Borax	As required
13	Asbestos Plate	As required
14	Wax	200 gm

15	Flask	6 nos
16	Gaskets	As required
17	Rubber sprue	As required
18	Aluminum die plate	As required
19	Gold potassium cyanide	As required
20	Rhodium Sulphate	As required
21	SRS Powder	As required
22	Silicon and Natural rubber	As required