

**SYLLABUS FOR THE TRADE OF TURNER UNDER
CRAFTMEN TRAINING SCHEME**

Period of Training: 2 Years

Week No.	Practical	Theory	Engg. Drawing	Workshop Sc.& Cal.
1	2	3	4	5
1.	<u>Induction Training:</u> Familiarization with the Institute. Importance of Trade Training. Machinery used in the trade. Types of work done by trainees in the trade. Introduction to safety rules in shop floor and to the fire fighting equipment etc.	Importance of safety and precautions to be observed in the section as well as in the Institute causes of accident and its remedies. Importance of the trade in the industrial development of the country. Subjects to be taught and standard of proficiency to be attained. Awareness of recreational,medical,leave and other facilities-necessary guidance to be provided to the new comers to become familiar with the working of the Institute including stores procedures.		
2.	Practice on hammering, marketing out, chipping, chisel grinding.	Measurement, line standard and end standared, steel rule-different types and graduation. Hammer and chisel different types and uses. Pricks punch scribe and its uses.	Engg.Drawings. Types and their importance.	Properties and uses of C.I. and W.I.
3.	Filing practice on plain surfaces, right angle by	Vice-types and uses. Files - different types and uses, cut grade,	Types of lines, their meaning and application as per – IS:	<u>Arithmetic</u> : Fundamental operations, addition, subtraction.

	filing. Use of calipers and scale measurement.	shape material etc. Try square-different types, parts, materials used etc. Caliperstypes and uses (Firm joint).	696.	Multiplication-division of whole numbers.
4.	Filing at right angle, marketing & hacksawing.	VEE-block, scribing, block. Straight adge and its uses. Hacksaw their types and uses.	Simple conventional symbols for material and parts as per IS: 696.	Properties and uses of plain carbon steel and alloy steel.
5.	Marking operation on flat & rounq job. Drilling operation.	Centre punch-construction & material uses. Drill machine different types, different parts, and odd leg caliper. Hacksaw blades-sizes, different pitch for different materials. Surface plat its necessity and use.	Uses and application of Drawing Instruments in the geometrical construction angles and triangles.	Fraction and decimals, conversion fraction to decimal and vice-versa.
6.	Threading with the help of taps and dies.	Tap-different types (Taper 2 nd and plug) care while tapping. Dies different types and uses. Calculation involved finding out drill size (Metric and Inch).	Geo. Const. rectangles, square circles, tingle.	Properties and us of copper, zinc, lead, tin, aluminium.
7.	Getting to know the lathe with its main components, lever positions and various lubricating points as well.	Definition of machine and machine tool-and its classification. History and gradual development of lathe.	Geo. Const. polygons, ellipse.	Simplification, application of fundamental metical operation to shop problems.
8.	Mounting of chuck on machine spindle and	Classicciation of lathe in details. Engine lath- function and	Geo. Construction - involute, o'val, helix.	Properties and uses of brass, bronze, bolder, bearing metal,

	unloading in various systems.	constuction of different parts.		timber, rubber etc.
9.	Trying of round stock on 4-jaw independent chuck. Use of 3-jaw self-centring chuck as well.	Description in details head stock-cone pulley type-all geared type-construction and function. Timber gear set.	Geo.construction parabols and hyperbols.	System of units. British metric and SI units for length,area,volume,capacity, weight,time,angle,their conversions.
10.	Progress Test.	Back gear unit-its-construction and speed calculation.	Free hand sketching of St.lines, oblique lines, rectangles,circles,squares, polygons,ellipse.	Effect of alloying elements on the property of C.I. & Steel.
11.	Grinding of R.H. and L.H. Side cutting tools checking of angles with tool angle gauge.	Lathe cutting tool-different types shapes and different angles (clearances & rakes)specification of lathe.	Free hand sketching of simple geometrical solids-cube, cone, prism, cylinder, sphere, pyramids.	Units of temperature, force work, power and energy-shop problems.
12.	Setting of lathe tools in different types of tool post following correct procedure.	Dierent types of lathe tool posts. Function of quick change gear box feed shaft, lead screw etc.	Standard printing style for letters & numbers as per IS : 696.	Rest and motion, velocity acceleration.
13.	Facing operation to correct length-centre drilling operation. Grinding of 'V' tools.	Combination drill-appropriate selection of size chart of combination drill. Drill chuck-its uses.	Free hand practice of printing style for standard letters and numbers.	Newton's Law of motion.
14.	Parallel turning practice-	Cutting speed, feed depth of cut,	Scales construction of plain	Mass, volume, density, weight

	measurement with scale and caliper.	calculation involved-speed feed, R.P.M. etc. recommended for different materials.	scale. R.F. (Representative fraction).	C.G.S., M.K.S. and F.P.S. units of force weight etc. their conversion shop problems.
15.	Step turning within ± 0.08 mm measurement with vernier caliper.	Vernier caliper – its construction. Principle graduation and reading, least count etc.	Construction of diagonal scale.	Mass, volume, density, weight C.G.S., M.K.S. and F.P.S. units of force weight etc. their conversion shop problems.
16.	Parallel turning practice-measurement with micrometer 0.08 mm. within \pm	Outside micrometer different parts, principle, graduation. Reading construction.	Simple dimensioning technique size and location dimension for parts, holes, angles, taper, screws etc. as per IS: 696.	<u>Power & Roots</u> <u>Factor, power, base, exponents.</u>
17.	Step turning practice within ± 0.08 mm with SQ shoulder, U/cut Feel of micrometer sources of error with micrometer.	Different types of micrometer. Outside micrometer. Vernier scale graduation and reading.	Transferring measurements for linear, angular, circular dimensions from the given objects to the related free hand sketches using different measuring instruments.	Multiplication and division of power root of a number.
18.	Drilling on lathe-step drilling- drill grinding practice.	Lathe accessories chuck-independent, self-centering, collet magnetic etc. its function, construction and uses.	Pictorial drawing of isometric drawing of simple geometrical solids.	Square root by arithmetics and problems related to the trade.
19.	Boring (Plain) measurement with I/S	Drills-different parts types sizes etc. different cutting angles,	Pictorial drawing of isometric drawing of simple	Work, energy and power their units- applied problems.

	caliper + 2 mm.	cutting speed for different material. Boring tool Countersinking and counterboring.	geometrical solids.	
20.	Boring (Plain) boring (Step) measurement with I/S micrometer ± 0.05 mm.	-----Do----- Letter & number drill core drill etc.	Oblique projection of simple geometrical solids.	-Do- And meaning of H.P.I.H.P. and B.H.P.
21.	Boring & internal recessing.	Driving plate, face plate, fixed and traveling steadies construction and use. Transfer caliper- its construction and uses.	-----Do-----	Percentage, changing percentage to decided and fraction and vice-versa.
22.	Checking alignment of lathe centres, Mounting job in between centres.	Lathe centres-different types and their uses. Lathe carrier its function, types and uses.	Isometric drawing of simple machined & casting block.	Problems on percentage related to trade.
23.	Reaming in lathe (using solid and adjustable reamer).	Reamers-types and uses. Lubricant and coolant-types, necessity, system of distribution. Selection of collant for different material. Handling & care.	-----Do-----	Meaning of stress, strain modulus of elasticity.
24.	Knurling practice in lathe (Diamond, straight helical & square).	Knurling meaning, necessity, types, and grade cutting speed for knurling.	-----Do-----	Ultimate strength, different types of stress factor of safety example.
25.	Turning practice-between centers on mandrel (Gear blanks).	Lathe mandrel different types and their uses.	Free hand sketches of trade related hand tools, cutting tools, measuring tools.	<u>Ratio & Proportions:</u> Ratio, finding forms and ratio proportions, direct proportion

				and indirect proportion.
26.	Fitting of dis-similar materials-M.S. in brass, Al. in cast iron etc.	Limit, fit and tolerances as per IS: 919-unilateral and bilateral system of limit. Fits different types, symbols for holes and shafts. Hole basis & shaft basis etc.	-----Do-----	Application of ratio and proportion to shop problems.
27.	-----Do-----	-----Do-----		Mixed direct and indirect proportion problems.
----- Industrial Visits to different Industries -----				
28	Taper turning by offsetting tailstock method.	Taper-necessity and meaning. Different methods of expressing tapers different standard tapers. Method of taper turning. Importance dimensions of tapers. Principle of setting the work and the tailstock. Calculation involving the tailstock offset method-advantages and dis-advantages.	-----Do-----	Machines basic principle velocity ratio-mechanical advantage, efficiency simple problems.
29.	Taper turning by offsetting tailstock method.	-----Do-----	-----Do-----	Machines-basic principle velocity ratio-mechanical advantage, efficiency, simple problems.
30.	Taper turning by hand slide swiveling (ext. E'Int.)	Taper turning by swiveling hand slide its calculation advantages E' disadvantages.	Orthographic drawing application of both first angle and third angle methods in	<u>Algebraic Symbols and fundamental algebraic Operations:</u>

			representing the drawing for simple and complex machine blocks given for exercises with dimensions.	Sign and symbols used in algebra, co-efficient terms like terms and unlike terms.
31.	-----Do----- (Bevel gear blanks)	-----Do----- Vernier bevels protractor-its function. Construction and reading.	-----Do-----	Algebraic addition, subtraction, multiplication and division.
32.	Taper turning by taper attachment (Male and Female) practice.	Taper turning by T/attachment-principle setting, advantage & disadvantage, calculation involved.	-----Do-----	Power and laws of exponent.
33.	-----Do-----	-----Do-----	-----Do-----	Algebraic-simplification problems.
34.	Taper turning by form tool (Int. & Ext.) (Taper matching)	Different types of form tool & their uses.	Standard methods as per IS: 696. Exercises for different sectional views on the given orthographic drawing of machine parts, casting etc.	Simple machine like wunch, pulley and compound axle etc.
35.	Ecentric turning practice (ext.)	Combinate setsquare, head, centre head, protractor head – its functions, construction and uses.	-----Do-----	Factor and equation: algebraic formula.
36.	Ecentric turning practice (ext.& int.)	Gauge-definition-different types plug and ring gauge, filler gauge, snap gauge, radius gauge.	-----Do-----	Factors and different types of factorisation.

37.	Ecentric boring position boring.	Vernier height gauge, function, construction and uses. Tmeplate its function & construction.	-----Do-----	-----Do-----
38.	-----Do----- Grinding of threading (Ext.) tool.	-----Do-----	-----Do-----	Equations simple simultaneous-quadratic.
39.	Screw-thread cutting whitworth thread (Ext.)	Screw thread-definition, purpose and its elements putch, root flank Angle etc. Fundamentals of thread cutting on lathe.	Inter-conversion of isometric oblique drawing to orthographic drawing and vice-versa-related problems such as Vee block, simple stepped blocks, blocks oriented by various machining operations etc.	Application, construction and solution of problems by equations.
40.	Screw thread cutting whitworth threads. (Ext. Grinding. Of threading (Int.) too.	Different types of screw thread-their forms and elements	Inter-conversion of isometric, oblique drawing to orthographic drawing and vice versa-related problems such as Vee blocks. Simple stepped blocks, blocks oriented by various machining operations etc.	Atmospheric pressure, pressure gauge, gauge pressure and absolute pressure.
41.	Screw threads cutting whitworth (Internal).	Different methods of forming threads. Calculation involved in	-----Do-----	<u>Logarithms and use of logarithm tables:</u>

		finding out core dia.		Logarithms, logarithm and exponent.
42.	Screw threads cutting whitworth (Internal).	Different between lead and pitch, gear train (Simple gearing) calculation.	-----Do-----	Use of logarithm and antilogarithm tables.
43.	-----Do----- Fitting of male & female threaded components.	Calculation involving driver, driven, lead screw pitch and thread to be cut. Threading dial-function, construction and use.	-----Do-----	Arthmetical operation involving logarithms in the computations.
44.	Screw thread cutting (Ext.) Metric-tool grinding.	Calculation involving pitch proportion ISO profile etc.	-----Do-----	Problem related to trade using logarithm tables.
45.	Use of hand chaser practice on threads (Ext. & Int.) non-ferrous materials.	Hand chaser-types. Uses etc. Dies-different-Die stock.	Surface development of solide of simple geometrical solids like, cube, rectangular block, cone, pyramid, cylinder prism etc.	Density of solids and siquids-simple experimental determination.
46.	Screw thread (Int.) metric and tool (Int. threading) grinding.	Conventional charts for different profile-Metric B.A., whitworth, pipe etc.	-----Do-----	Specific gravity-principle of Archemedis.
47.	Fitting of male and female thread components (metric)	Calculation involving gear ratios and gearing (Compound gearing.)	-----Do-----	Relation between specific gravity and density-simple experimental determination.
48.	Tool grinding for Sq.	Calculation involving tool size,	Interpenetration of solids and	Geometry:

	thread (Ext.) Sq. (Ext.) thread practice.	core dia, pitch proportion, depth of cut etc. of Sq. thread etc.	conventional / curves on drawings.	Fundamental geometrical definition of angle and properties of triangle. Triangles and properties of triangle.
49.		-----Do-----	-----Do-----	Pythagoras Theorem: Properties of similar triangles.
50.	Fitting of male and female square threaded components.	Basic process of soldering, brazing, buttwelding of tool etc.	Solution of NCVT test paper (Priliminary).	
51.	-----Do-----	Revision & Test.	Revision.	Revision
52.	Test.	Preliminary.		
53.	Introduction to various components produced on lathe-place of the Turner trade in the planned industrial development of the country.	Introduction to the trade-its importance and role in the industry Review of lathe machine its classification for productivity.	Revision of 1st year's topics.	Revision 1 st yeat course.
54.	Forging (Lathe tools) practice different shapes heat treatment of tools.	Cutting tool material H.C. steel, H.S. steel satellite tungsten, carbide ceramic etc-constituents and their percentage, uses O/S & I/S. Spring caliper construction & use.	-----Do-----	-----Do-----

55.	Form turning practice (Off hand).	Form tools- function types and uses. Template-purpose and use. Dial test indicator- construction, use etc.	Screw threads their standard forms as per ISI external and internal thread conventions on the features for drawings as per ISI.	Rectangular, square, rombus, parallelogram etc. and their properties.
56.	-----Do----- Grinding and setting of parting off tool on tool post.	Calculation involving modified rake of clearance angles of lathe tool at above and below the centre height. Subsequent effect of tool setting.	-----Do-----	Circle and properties of circle regular polygons.
57.	Grinding of various shapes chip braker tool use of chip breaker.	Jig & fixture- definition pes and use. Chip braker tool- purpose and type. Chattering-factors & remedies.	Sketches for bolts nuts, screws and other screwed members.	Application of geometry to shop problems.
58.	Taper turning by taper attachment-Morse Taper-different number (Lathe Centres).	Sine device-construction types and use. Slip gauges- uses and selection.	-----Do-----	Heat and temperature, thermometric scales their conversions.
59.	Internal taper turning by taper attachment. Taper matching exercise (application of precision blue) (Plug and Ring Gauge).	Checking of taper with sine bar and roller-calculation involved.	Standard rivet forms as per I.S.I.	Temperature measuring instruments.

60.	Turning and boring practice on C.I. block & tip brazing on shank.	Method of Brazing solder. Flux used for tip tools.	Rivet joints lap.	Quantity of heat specific heats of solids, liquids and gases.
61.	Tungsten carbide tools grinding practice. Turning at high speed (using revolving centre).	Cutting speed, feed turning time calculation, cutting speed chart (Tungsten carbide tool) etc.	Riveted joints butt.	Heat loss and heat gain, with simple problems.
62.	Grinding of negative rake and use of negative rake tool on non-ferrous metal.	Tool life. Negative top rake- its application and performance with respect to positive top rake.	Sketching of keys, cotter and pin joints.	<u>Mensuration:</u> Plain figures- triangles, square, rectangle, and parallelogram.
63.	Balancing, mounting & dressing of grinding wheel (Padestal). Adjustment of tool rest.	Lubricant- function types source of lubricant etc. Method of lubrication. Dial test indicator, use for parallasier concentricity etc. in respect of lathe work. Grinding wheel-grade bond etc.	-----Do-----	Plain figures- trapizium, regular polygons, circle, hollow circles.
64.	Periodical lubrication procedure on lathe, testing of accuracy of alignment. Procedure of checking accuracy of lathe. Preventive maintenance of lathe.	Preventive maintenance its necessity, frequency of lubrication. Preventive maintenance schedule.	Sketches for simple pipe unions with a simple pipe line drawings.	Plain figures- segment and sector of circle ellipse, fillers.
65.	Industrial Visit To.	Different industries (to gather knowledge about the machinery,	-----Do-----	Solid figures- Prism, sylinder, pyramid, cone.

		operations etc. which are not available/per- formed in the Institute i.e. special purpose lathe programme control m/c etc.		
66.	Acme thread cutting (male & female) & tool grinding.	Calculation involved depth core dia, pitch proportion etc. of Acme thread.	Concept of preparation of assembly drawing and detailing. Simple assemblies & their details of trade related tools/jobs/exercises with the dimentions from the given samples or models. Tool post for the lathe with washer and screw.	Solid figures: Frustum of a cone sphere, forus, and spherical segment.
67.	-----Do----- Fitting of male and female threaded components.	-----Do-----	-----Do-----	Material weight and cost problems related to the trade.
68.	Pipe thread cutting (Male & Female).	Depth micrometer (Metric-Inch). Purpose construction, uses etc. limit gauges their uses.	Details and assembly up Vee-blocks with clamps.	<u>Trigonometry</u> : Trigonometrical rations, use of trigonometrical tables.
69.	Crank shaft-single throw (Desirable).	Marking table-construction and function and function. Angle plate-constrution and use. Optical dividing head for eccentric checking.	-----Do-----	Area of triangle by trigonometry.
70.	Turning of long shaft	Roller and revolving steadies.	Details and assembly of shaft	Finding height and distance by

	(Using steadies) (with in \pm 0.03 mm)	Necessity, construction, uses etc.	and pulley.	trigonometry.
71.	Cutting metric threads on inch. Lead screw and each and inch threads on metric lead screw.	Calculation involving gear ratios metric trades cutting on inch L/S lathe and vice-versa.	-----Do-----	Application of trigonometry to shop problems.
72.	Use of attachments on lathe for different operations.	Different types of attachments used on lathe.	Details and assembly of Bush Bearing.	-----Do-----
73.	Thread cutting on non-ferrous metals-copper, aluminum, brass etc.	Various procedures of thread measurement thread screw pitch gauge. Screw thread micrometer, tool maker's microscope etc.	-----Do-----	Triangle of forces, parallelogram of forces.
74.	Advanced eccentric boring (position boring using tool maker's button)	Tool maker's button-its parts constructions and uses, Telescopic gauge its construction and use.	Details and assembly of simple coupling.	Composition and resolution of forces.
75.	Boring and stepped boring (within \pm 0.05 mm).	Inside micrometer principle, construction graduation, reading use etc. (metric & Inch).	-----Do-----	Representation of forces by vectors- simple problems on lifting tackles like jib cranes, wall cranes etc. and solution of problems with the Sid of vectors.
76.	Continuation threads fitting (Metric).	Calculation involving fractioned threads.	Details and assembly of simple hand vice.	-----Do-----

77.	Multiple thread cutting -2 starts (External) B.S.W.	Multiple thread- function, use, different between pitch & lead formula to find out start, pitch, lead, gear ratio etc.	Details and assembly of a simple hand vice.	Representation of forces by vectors- simple problems on lifting tackles like jib cranes, wall cranes etc. and solution of problems with the aid of vectors.
78.	Multiple threads cutting B.S.W. (Internal). Fitting of male and female threads.	Indexing of start different methods tool shape for multistart thread.	-----Do-----	Moment of a forces couples.
79.	Multiple thread cutting 60 (External & Internal).	Setting of a lathe calculation for required change wheels.	-----Do-----	Simple problems on straight and bell cranked lever.
80.	Multiple threads cutting Acme form (Male and Female).	Calculation involving shape of tool, change wheel, core dis, etc.	-----Do-----	Centre of gravity simples experimental determination. Stable, unstable and neutral equilibrium simple explanation.
81.	Multiple threads cutting square form (Male & Female).	Calculation involving shape, size, pitch, core dia etc.	Blue print reading Simple exercises related to missing lines.	Friction-co-efficient of friction.
82.	Multiple thread cutting square form (Male and Female).	-----Do----- Helix angle, leading & following angles.	-----Do-----	Simple problems related to friction.
83.	Multiple threads cutting work (External).	Thread dimensions tool shape, gear calculation, pitch, depth, lead etc.	Blue print reading- simple exercises related to missing views.	Megnetic substances natural and artificial magnets.

84.	Cutting of helical grooves in bearings and bushes (Oil groove).	Heat treatment-meaning & procedure hardening, tempering, normalising, annealing, carburising etc.	-----Do-----	Method of magnetisation- uses of magnets.
85.	Setting & operation involving face and angle plate.	Accessories used on face plate- their uses. Angle plate- its construction & use. Balancing- its necessity.	Simple exercises related to missing symbols.	Electricity & its uses electric current positive & negative terminal
86.	Turning & boring of split bearing- (using boring bar and fixture).	Care for holding split bearing. Fixture and its use in turning.	Simple exercises related to missing symbols.	Use of fuses and switches, conductors and insulators.
87.	Thread on taper surface (Vee form).	Setting of tool for taper threads- calculation of taper setting & thread depth.	Simple exercises related to missing section.	Simple electric circuits: Simple calculation.
88.	Capstan lathe work.	Production type lathe capstan, turret, automatic, multi-spindle etc.	-----Do-----	Ohm's Law- simple calculation, electrical insulating materials.
89.	-----Do-----	Capstan lathe- its main parts- function, preference over centre lathes.	Simple exercises related to missing dimensions.	Graphs : Abscissa and ordinates graphs of straight line related to two sets of varying quantities.
90.	-----Do-----	Different types of tools used on capstan lathe and their advantages. Using of floating cutter.	-----Do-----	-----Do-----

91.	Practices in turret lathe.	Turret lathe –its main parts types, difference between capstan and turret lathe.	Simple exercises related to identification of faces.	Practice on simple pocket calculator.
92.	Practice in turret lathe.	Different types of tools used on turret lathe and their advantages.	-----Do-----	Meaning to tenacity elasticity, malleability, brittleness, hardness, and ductility - examples.
93.	-----Do----- Threading with self-opening die head.	-----Do----- Coventry dies head & closer-function.	Solution of NCVT. Test papers	-----Do-----
94.	-----Do----- (Int. threading with collapsible tap)	-----Do----- Collapsible tap – its uses	-----Do-----	Heat treatment of steel hardening, annealing, tempering, normalizing, case hardening, standard and measurement.
95 to 99	Project work.	Special lathe-copying relieving wheel turning axle turning etc. Relieving lathe-its type operational features-calculation of gearing etc. Detailed description about the typical work and cam arrangement etc. Surface finish symbols used on working blue prints-I.S. system-	Solution of NCVT. Test papers. -----Do----- Revision.	Heat treatment of steelhardening, annealing, tempering, normalizing, case hardening, standard and measurement. Transmission of power by belt pulley & gear drive. Solution of NCVT test papers.

		lapping, housing etc. Automatic lathe – its main parts, types different tools used – circular tool etc.	Revision.	Solution of NCVT test papers.
100.	Project work-useful articales (different type fittings).	Interchangeability meaning, procedure for adoption, quality control, procedure for quantity production.	-----Do-----	Revision.
101.	Project work-useful articales (different type fittings).	Interchangeability meaning, procedure for adoption, quality control, procedure for quantity production.	Revision	Revision
102.	Work order from local industries (Production type).	Revision & Test.	Institute Test.	Institute Test.
103.	-----Do-----	-----Do-----	-----Do-----	-----Do-----
104.	Final Test.	Final Test.	Final Test.	Final Test.

Sr. No.	Name of the tools & equipment as per the syllabus	No. of required for Instructor & Trainees for one Unit as per DGET Norms.
	TRAINEE TOOL KIT	
1	CALIPER OUTSIDE FIRM AND SPARING JOINT 150 MM.	13
2	CALIPER INSIDE FIRM AND SPARING JOINT 150 MM.	13
3	CALIPER ODD-LEG FIRM JOINT 150 MM.	13
4	STEEL RULE 150 MM TO READ METRIC	13
5	SCRIBER 150 MM*3MM.	13
6	HAMMER BALL PEIN 250 GM. WITH HANDLE	13
7	CENTRE PUNCH 100 MM.	13
8	PRICK PUNCH 100 MM.	13
9	DIVIDER SPRING JOINT 150 MM.	13
10	SAFETY GOGGLES CLEAR GLASS (GOOD QUALITY)	13
	GENERAL SHOP OUTFIT	
11	SURFACE PLATE 60*60 CM.	1
12	WORK BENCH 240*120*75 CM (HIGH) (B)	1
13	MARKING TABLE (CI) 120*120 CM.	1
14	BENCH VICE 125 MM JAW	6
15	VEE-BLOCK 75 AND 125 MM WITH CLAMP	1
16	SURFACE GAUGE 250 MM ARM	2
17	HAMMER BALLPEIN 750 GM WITH HANDLE	6
18	CHISEL FLAT 20 MM.	6

19	HAMMER COPPER/BRASS 500 GM WITH HANDLE	12
20	HACKSAW ADJUSTABLE 200 TO 300 MM (PISTOL GRIP)	6
21	FILE FLAT 300 MM ROUGH	6
22	FILE FLAT 250 MM 2ND CUT	6
23	FILE FLAT 250 MM SMOOTH	6
24	FILE HALF ROUND 250 MM 2ND CUT	6
25	FILE ROUND 250 MM SMOOTH	12
26	FILE HALF ROUND 150 MM SMOOTH	24
27	KNURLING TOOL REVOLVING HEAD (ROUGH, MED., FINE) DIAMOND AND STRAIGHT	3
28	COMBINATION SET 300 MM RULE (COMPLETE SET)	2
29	SCREW DRIVER 200 & 300 BLADE HEAVY DUTY	2
30	SPANNER DOUBLE ENDED 6 MM TO 21 MM (AVAILABLE WITH MACHINE)	3
31	SPANNER ADJUSTABLE 200 MM	3
32	PLIERS FLAT NOSE 150 MM SIDE CUTTING	3
33	CALIPER TRANSFER INSIDE 150 MM	3
34	MICROMETER OUTSIDE 0 TO 1 " READING 0.001"	1
35	MICROMETER OUTSIDE 0 TO 25 MM READING 0.01 MM	7
36	MICROMETER OUTSIDE 25 TO 50 MM READING 0.01 MM	6
37	MICROMETER OUTSIDE 50 TO 75 MM READING 0.01 MM	2
38	MICROMETER INSIDE UPTO 25 MM READING 0.01 MM	4
39	MICROMETER INSIDE UPTO 25 TO 150 MM READING 0.01 MM	2
40	DEPTH GAUGE MICROMETER 0 TO 150 MM READING 0.01 MM	2

41	VERNIERCALIPER OUTSIDE, INSIDE AND DEPTH 200 MM/8" WITH METRIC & INCH SCALE	7
42	DIAL VERNIER CALIPER WITH METRIC AND INCH DIAL-200 MM OR 8" READING 0.05 MM OR 0.001"	1
43	VERNIER BEVEL PROTRACTOR 150 MM BLADE	2
44	VERNIER MICROMETER 0 TO 25 MM OUTSIDE	1
45	VERNIER MICROMETER 25 TO 50 MM OUTSIDE READING 0.001 MM	1
46	VERNIER MICROMETER 0" TO 1" OUTSIDE READING 0.0001"	1
47	FEELER GAUGE 100 MM BLADE METRIC SET	2
48	RADIUS GAUGE 1 TO 7 MM & 7.5 TO 15 MM	2
49	CENTRE GAUGE COMPUTER. 60° AND 55°	6
50	SCREW PITCH GAUGE WITHWORTH & METRIC	2
51	ANGEL GAUGE 290	2
52	DIAL TEST GAUGE WITH MAGNETIC BASE.	1
53	DIAL TEST INDICATOR 0.01 MM WITH VERNIER HEIGHT GAUGE 300MM	1
54	TRY SQUARE 150 BLADE	2
55	MAGNIFYING GLASS 75 MM DIA	1
56	PLAIN, RING AND PLUG GAUGE 12 TO 50 MM	1
57	WHEEL DRESSER -HUNTINGTON TYPE	2
58	WHEEL DRESSER DIAMOND (INSERTED-0.75 OR 1 CHART)	2
59	MICROMETER SCREW THREAD-INTERCHANGEABLE ANVIL FOR VARIOUS METRIC PITCHES	1
60	MORSE TAPER PLUG & RING GAUGE NO 0TO7 ML.	1
61	SINE BAR WITH CENTRES 200 MM	1
62	SLIP GAUGE METRIC SET (87 PIECES IN A BOX)	1
63	MORSE TAPER SLEEVES NO. 0TO1, 1TO2, 2TO3, 3TO4, 4TO5, AND 1TO3.	2
64	DRIFT	2
65	TWIST DRILL STRAIGHT SHANK 1 TO 12 MM BY 1 MM	2

66A	TWIST DRILL TAPER SHANK 12 TO 40 MM BY 0.05 MM	2
66B	TWIST DRILL STRAIGHT SHANK 1 TO 13 MM	
67	DRILL CHUCK 6 TO 12 MM CAP. WITH KEY	2
68	TAP & DIE B.A. NO. 0 TO 10 IN A BOX	1
69	TAP & DIE METRIC SET UPTO 25 MM	2
70	TAP & DIE B.S.F. UPTO 1"	1
71	TAP & DIE B.S.W. UPTO 1"	2
72	REAMER MACHINE STRAIGHT FLUTE 6 TO 25 MM BY 1 MM	1
73	REAMER ADJUSTABLE 10 TO 20 MM	1
74	TOOL HOLDER RH & STRAIGHT FOR 6 MM SQUARE TOOL BIT	12
75	PARTING TOOL HOLDER WITH H.S.S. BLADE	12
76	TOOL BITS 12 MM.SQ. *150 ASSORTED SHAPED	12
77	BORING TOOL HOLDER FOR 6MM.SQ.TOOL BIT	12
78	STEEL RULE 300MM WITH METRIC AND INCH	12
79	OIL CAN 1/2 PINT (PRESSURE FEED SYSTEM)	12
80	DOG CARRIER 235,50,AND 75 MM	12
81	ANGLE PLATE WITH SLOTS 200 MM	2
82	SPIRIT LEVEL 0.05 METER 200M	1
83	TOOL MAKER'S BUTTON	1
84	COMBINATION DRILL A-2.5 AND A-1	12
85	OIL STONE 12 MM SQ.*100 LONG FINE.	12
86	TAP WRENCH (ADJUSTABLE)	2
87	DIE HANDLE	2
88	TOOL BIT ASSORTED SIZES ON HOLDER	12
89	MACHINE VICE 100 MM JAW (FOR DRILL MACHINE)	1

90	CHALK BOARD ON MOBILE STAND	1
91	SPARE GRINDING WHEEL AJAX TYPE FOR CARBIDE TOOL	2
92	ALMIRAH-1980*910*480MM	1
93	ST.LOCKER WITH DRAWER (PIGEON HOLES)	1
94	DESK	1
95	STOOL	4
96	ANGLE GAUGE FOR TOOL GRINDING	6
97	HAND CHASER M-12 & M-16 (EXTERNAL)	2
98	HAND CHASER M-12 & M-16 (INTERNAL)	2
99	REVOLVING CENTRE (TO SUIT LATHE TAILSTOCK)	6
100	TOOL CEMENTED CARBIDE ASSORTED SHAPED (EXTERNAL) FOR STEEL TURNING-SET OF 12.	2
101	THREAD PLUG GAUGE M-20 & M-21	1
102	THREAD RING GAUGE M-20 & M-21	1
103	MACHINE CHASE M-12 TO M-21 (STD.SERIES) TO SUIT ON COVENTRY DIE HEAD.	1
104	GAUGE DRILL GRINDING	2
105	MAGNETIC CHUCK 150MM DIA. (CIRCULAR TYPE)	1
106	LATHE MANDRELS (DIFF.TYPES)	1
107	CONVENTRY TYPE DIE HEAD (SELF OPENING)	1
108	COLLAPSIBLE TAP WITH ATTACHMENT	1
109	COMBINATION DRILL	0
110A	FIRE EXTINGUISHER	1
110B	FIRE BUCKETS	4
1	CNC TRAINER LATHE	1
2	CNC TURNING TOOLS ASSORTED	1

3	CNC BORING TOOLS ASSORTED	1
4	CNC GROOVING TOOLS (EXTERNAL & INTERNAL)	1
5	V.C.P.	1
6	COLOUR TV MONITOR	1
7	RELATED VIDEO & AUDIO CASSETTE FOR TURNER TRADE	1
8	ELECTRONIC VERNIER CALIPER (INCH & MM. 8"/299 MM. LCM 01.0005"/01.01 MM	1
9A	DIGIMETRIC ELECTRONIC OUTSIDE MICROMETER (01 TO 25 MM) (A)	1
9B	DIGIMETRIC ELECTRONIC OUTSIDE MICROMETER (25 TO 55 MM) (B)	1
	GENERAL MACHINERY	
1	LATHE- 15 CM CENTRE HEIGHT, TO ADMIT 120 CM BETWEEN CENTRES. MACHINE TO BE MOTORISED AND SUPPLIED WITH COOLANT INSTALLATION, 1-JAW INDEPENDENT CHUCK 250 MM, 3-JAW SELF-CENTERING CHUCK 150 MM, FIXED STEADY, TRAVELLING STEADY, FACE PLATE, DRIVING PLATE, 4-WAY TOOL	4
2	LATHE S.S.&S.C. (ALL GEARED HEAD STOCK) 20CM. CENTRE HEIGHT, 120CM BETWEEN CENTRES, GAP BED MACHINE TO BE MOTORISED AND SUPPLIED WITH COOLANT INSTALLATION, 4-JAW INDEPENDENT CHUCK, 300 MM, 3-JAW SELF-CENTERING CHUCK 300MM FIXED STEADY, FACE PLATE, DRIVING PLATE	4
3	LATHE TOOL ROOM S.S. & S.C. (ALL GEARED TYPE) 15 CM CENTRE HEIGHT, 120 CM BETWEEN CENTRES . MACHINE TO BE MOTORISED AND SUPPLIED WITH COOLANT INSTALLATION, 1-JAW INDEPENDENT CHUCK 250 MM, 3-JAW SELF-CENTERING CHUCK 150 MM FIXED STEADY, TRAVELLING STEADY, FACE	4
4	LATHE S.S. & S.C. (CONE PULLEY TYPE) 15 CM HEIGHT 90 CM BETWEEN CENTRES. MACHINE TO BE MOTORISED 1-JAW INDEPENDENT CHUCKS 250 MM, 3-JAW SELF-CENTERING CHUCK, 150 MM SINGLE TOOL POST.	1
5	GRINDING MACHINE PEDESTAL TYPE D1.E.250 MM DIA. WHEEL WITH WHEEL GUARD AND VISION.	1
6	GRINDING MACHINE PEDESTAL TYPE D1.E.150 MM DIA. WHEEL WITH WHEEL AND VISION GUARD.	1
7	DRILL MACHINE PILLAR TYPE- MOTORISED UPTO 12 MM CAP.	1
8	POWER SAW MACHINE -HYDRAULIC FEED SYSTEM -400 MM. BLADE SIZE.	1
9	CAPSTAN LATHE 250 MM SAWING, 25 MM SPINDLE BORE WITH ALL ACCESSORIES AND ATTACHMENT INCLUDING COLLET CHUCKS AND SET.	1