

**TRADE: MACHINIST****LIST OF TOOLS & EQUIPMENTS FOR 15 TRAINEES****A : TRAINEES TOOL KIT:-**

<b>Syllabus e S.No.</b>	<b>Name of the items</b>	<b>Quantity of DGET norm's per unit</b>
1	Steel rule 30 cm graduated both in English & Metric units	16 nos
2	Outside spring caliper 150 mm	8 nos.
3	Inside spring caliper 150 mm	8 nos.
4	Hermaphrodite caliper 150 mm	8 nos.
5	Divider spring 150 mm	8 nos.
6	Centre Punch 100 mm	8 nos.
7	Hammer B.P. 0.5 kg.	16 nos.
8	Cold chisel flat 25 x 200 mm	16 nos.
9	File flat bastard 300 mm	16 nos.
10	File flat 2nd cut 250 mm	16 nos.
11	File flat smooth 200 mm	16 nos.
12	Engineers screw driver	16 nos.
13	Combination Plier 150 mm	16 nos.
14	Safety glasses	16 nos.
15	Surface plate 400 mm x 400mm grade	1 no.
16	Table for surface plate 900 x 900 x 1200 mm	1 no.
17	Marking off table 1200 x 1200 x 900 mm high	1 no.
18	Scribing block universal 300 mm	2 nos
19	V- Block 100/7 – 80 – A	2 nos
20	Try square 300 mm	2 nos
21	Outside spring caliper 200 mm	2 nos
22	Divider spring 200 mm	2 nos
23	Inside spring caliper 200 mm	2 no.
24	Straight edge steel 1 meter	1 no.
25	Straight edge steel 500 mm	1 no.
26	Steel tape 2 meter in case	1 no.
27	Steel rule 60 cm graduated both in English & Metric units	2 nos
28	Sprit level 2V 250, 05 meter	1 no.
29	Hammer B.P. 800 gms. With handle	4 nos
30	Screw driver, heavy duty 300 mm with handle	4 nos
31	Hammer lead 1 kg.	2 nos
32	Spindle blade screw driver 100 mm	4 nos
33	Allen Hexagonal keys 2.5 to 12	2 sets
34	Spanner D.E. series 2 (set of 7 pieces)	6 sets
35	Adjustable spanner 300 mm	2 nos
36	Reduction sleeve Morse 1-1, 3-1, 4-1, 4-2, 5-1, 5-2, 6-1,	2 nos each
37	Angle plate size 200 x 100 x 200 mm	2 nos
38	Angle plate adjustable 250 x 150 x 175 mm	2 nos
39	Solid parallels in pairs (different sizes) in Metric	12 pairs (assorted)

40	Oil Can pressure feed 500 mg.	6nos
41	Oil stone 150 x 50 x 25 mm	2nos
42	Number drills H.S.S. (parallel shank)	1set
43	Twist drills 3 mm to 13 mm in step of 0.5 mm (parallel shank)	2set
44	Drill Chuck 0.20 with taper shank	1no
45	Centre drill A 1 to 5	2set
46	Grinding wheel dresser (diamond)	1no
47	Grinding wheel dresser Huntington type	2 nos.
48	Clamps C 100 mm	2 nos.
49	Clamps C 200 mm	2 nos.
50	Tap and Die set in box metric pitch (6 mm to 12 mm)	1set
51	Drill H.S.S. taper shank (6 mm to 12 mm in step of 0.5 mm)	2set
52	File flat 2nd cut 250 mm	4nos
53	File flat smooth 200 mm	4nos
54	File Half round 2nd cut 250 mm	4nos
55	File triangular smooth 200 mm	4nos
56	Needle file set	1no.
57	File square 2nd cut 250 mm	4nos
58	Reamer 6 mm to 25 mm by 1 mm	1set
59	Reamer adjustable 10 mm to 15 mm by 75 mm	1set
60	Tool bits H.S.S. 6 mm square	1 Dozen
61	Tool bits H.S.S. 10 mm square	1 Dozen
62	Tool bits holder (Armstrong) L.H	4nos
63	Tool bits holder (Armstrong) R.H.	4nos
64	Assorted tools and bit holders for lathe, shaper, slotter & planner in different shapes and sizes	As required
65	Hacksaw frame adjustable 250-300 mm with blades	2nos
66	Table chuck 75 mm jaw swivel base	1no
67	Machine vice 200 mm swivel base	4nos
68	Machine vice 160 mm swivel base	2nos
69	Hand vice 50 mm jaw	2nos
70	Radius turning attachment	1no
71	Angle turning attachment	1no
72	Compound angle vice (standard sine)	1no
73	Universal vice 150 mm	1no
74	Universal table angle plate	1no
75	Shaper tool holder turret type	2nos
76	Base chuck for slotter	1no
77	shaper indexing center	1no
78	Knurling tools (set of 3) straight and diamond	1 each
79	Plier cutting 200 mm	2nos
80	Carbide tipped tools of different sizes and shapes (throw away tips)	2sets
81	Hand hammer 1 kg. With handle	2nos

1	Cylindrical cutter 63 x 90 bore dia	3nos
2	Cylindrical cutter 80 x 90 bore dia.	3 nos
3	Side and face cutter dia 80 x 8	2 nos
4	Side and face cutter dia 160 x 10	3 nos
5	Side and face cutter dia 100 x 12	2 nos
6	Side and face cutter dia 160 x 16	2 nos
7	Side and face cutter dia 200 x 20	3 nos
8	Side and face cutter dia 100 x 10	2 nos
9	Equal angle cutter 45 <sup>0</sup> /100	2 nos
10	Equal angle cutter 60 <sup>0</sup> /100	2 nos
11	Equal angle cutter 90 <sup>0</sup> /100	2 nos
12	Double angle unequal cutter 50 x 12 x 55 <sup>0</sup>	2 nos
13	Double angle unequal cutter 50 x 12 x 60 <sup>0</sup>	2 nos
14	Double angle unequal cutter 50 x 12 x 70 <sup>0</sup>	2 nos
15	Double angle unequal cutter 50 x 12 x 75 <sup>0</sup>	1 no
16	Single angle cutter 63 x 18 x 45 <sup>0</sup> RH	1 no
17	Single angle cutter 63 x 18 x 45 <sup>0</sup> LH	1 no
18	Single angle cutter 63 x 18 x 60 <sup>0</sup> RH	1 no
19	Single angle cutter 63 x 18 x 60 <sup>0</sup> LH	<b>1 no</b>
20	Slitting Saw cutter Ø 75 x 3 X Ø 27 mm	2 nos.
21	Slitting Saw cutter Ø 100 x 6 X Ø 27 mm	2 nos.
22	Shell End Mill Ø 50 x 36 x Ø 22 (preferably inserted tip type)	2 nos.
23	Shell End Mill Ø 75 mm x 50 x Ø 22 (preferably inserted tip type)	2 nos.
24	Parallel shank end mills Ø6, Ø10 and Ø 16 are (double fluted), Ø 20 mm & Ø 25mm (four fluted)	4 nos. each
25	'T' slot cutter with parallel shank- Ø 17.5 x 8 mm width x dia. of shank 8 mm	2 nos.
26	Concave Milling cutter Ø 63 x 6 radius x Ø 27 mm	1 nos.
27	Convex Milling cutter Ø 63 x 6 radius x Ø 27 mm	1 nos.
28	Disc type form milling cutter (involute form -2 module, 20° pressure angle)	1 set
1	Micrometer outside 0-25 mm	4 nos
2	Micrometer outside 25-50 mm	<b>2 no</b>
3	Micrometer outside 50-75 mm	1 no
4	Micrometer depth gauge 0-200 mm	1 no

5	Digital micrometer 0-25 mm	1 no
6	Direct reading vernier caliper 0- 300 (direct reading with dial)	1 no
7	Digital vernier caliper 0- 300 mm	1 no
8	Vernier height gauge 250 mm	1 no
9	Vernier gear tooth caliper	1 no
10	Combination set with 300 mm rule	2 sets
11	Vernier bevel protractor with 150 m blade	1 no
12	Bevel gauge 200 mm	1 no
13	Telescopic gauge 13 mm to 300 mm	1set
14	Sine Bar 200 mm	1 no
15	Dial test indicator with magnetic gauge type 1 grade A with magnetic base	1 no
16	Center gauge 60 <sup>0</sup>	1 no
17	Slip gauge set (normal set) metric (for the whole institute)	1set
18	Screw pitch for metric pitches (25-6 mm)	1set
19	Radius gauge metric set (1-6 mm)	2 sets
20	Limit plug gauges 5 mm to 25 mm by 2.5 mm	1set
21	Ring gauges 5 mm to 25 m by 2.5 mm (GO & NO GO)	1set
22	Taper gauge M.T. No. 1, 2, 3, 4 & 5	1set
23	Feeler gauge	1 no
24	Planer gauge standard size	1 no
25	Magnifying glass 75 mm	2 Nos
1	Steel lockers for 12 trainees	1 no
2	Steel chair for Instructor	1 no
3	Steel table for Instructor	1 no
4	Work bench for Fitters with 2 vices of 100 mm jaw	1 no
5	Steel cup board 180 x 90 x 45 mm	1 no
6	Steel cup board 120 x 60 x 45 cm	1 no
7	Black board with easel	1 no
8	First Aid Box	1 no
1	Shaping machine 450 mm stroke (motorized) with all attachments	2 Nos.
2	Shaping machine 315 mm stroke (hydraulic) with all attachments	1 no
3	Double column planer 1500 x 1000 x 1000 (motorized) with all attachments	1 no
4	Slotter 180 mm stroke (motorized) with all attachments	1 no
5	Lathe general purposes all geared height of centers 150 mm to below Between centers 1200 mm supplied with 4 jaw chuck, Taper turning attachment, steadies etc. and set of lathe tools	3 Nos.

6	Tool and cutter grinder 250 mm to admit 450 mm between center- fully motorized work head supplied with tool rest of different types table clamps and other attachments.	1 no
7	Drilling machine pillar 20 mm capacity	1 no.
8	Radial drill 1200 mm area motorized with tapping attachment	1 no.
9	Silicon carbide grinder for carbide tipped tools	1 no.
10	Double ended Pedestal Grinder with 178 mm wheels(one fine and one rough wheel)	1 no.
11	Milling machine universal horizontal Table Length x width 1350 x 310 mm (motorized) with all attachments such as . a. Universal head b. Vertical head 1. Slotting attachment 2. Rack cutting attachment 3. Rotary table 4. Dividing head 5. Adaptors, arbors and collects etc. for straight shank and mill from 3 mm to 30 mm	2 Nos.
12	Milling machine plain type horizontal Table Length x width 1350 x 310 mm (motorized) with all attachments	1 no.
13	Milling machine vertical Table Length x width 1350 x 310 mm (motorized) with all attachments	1 no.
14	Surface grinding machine wheel dia. 180 mm (or near) reciprocating table, longitudinal table traverse 200 mm (or near) fitted with adjustable traverse stop. Full motorized supplied with magnetic chuck 250 mm x 120 mm diamond tool holder set of spanner, grease gun etc.	1 no.
15	Cylindrical grinder Max. grinding length                      300 MM Height of centre                              130 MM Max. distance between centers            340 MM	1 no.
16	CNC machining CNC Milling Machine <b>Mechanical Capacities</b> Machine Type                                  Floor Standing Machine Machine Structure                              Fabricated Cast Iron Structure Travel X axis                                      300 mm Travel Y axis                                        250 Travel Z axis                                        250 mm Table Size    700 x 200 mm Tool Adopter Extraction & Clamping system                      Automatic (Pneumatic System) Spindle Nose Taper                              BT 30 Spindle Type                                        Cartridge Spindle (Pneumatic Tool Extraction) Spindle Bore                                        23 mm Spindle to table distance                      250 mm Spindle to Column distance                   250 mm Transmission                                        Ball Screw & Linear Guide ways	1 no.

Lubrication system	Automatic Lubrication Pump	
Coolant Tank Capacity	40 Liters	
Machine weight	1600 kg	
Machine Size	2000 x 1500 x 1400 mm	
<b>Electrical capacities</b>		
Spindle Motor	2 H.P AC Induction Motor	
Spindle Speed	100 - 2800 rpm	
Spindle Drive	Variable Frequency Drive	
Axis Motor	Servo Motor	
Number of Axis	3	
Supply	220v,50hz,3 phase for machine	
Automatic Tool Changer	8 Station provided	
<b>CNC System</b>		
CNC Controller	HUST CNC Controller H4P-M with Panasonic	
Servo System		
Type of Control System	Industrial CNC Controller with provision to	
connect to PC		
Tool Path Simulation	Provided	
Input System	Metric/Inch	
Backlash compensation	Provided	
Axis Feed Rate	0 – 3000 mm/min	
Axis Rapid rate	5000 - 10000 mm/min	
Resolution	0.001 mm	
Repeatability	± 0.002 mm	
CNC Programming	Standard ISO ( G , M , F, T Codes)	
Program Dwell	Provided	
Block Skip Function	Provided	
Emergency Stop	Provided	
Supervisor Lock	Provided	
Password Protection	Provided	
Graphical Simulation	Online Simulation Provided	
Self Diagnostic Function	Provided	
DNC communication	Possible	
CAD/CAM Compatibility	Possible	
Hand wheel operation	MPG for manual operation (Optional)	
Co-ordinate system	Absolute and incremental	
Axis feedback	100% Closed Loop	
Option skip function	Available	
Optional stop and feed hold function	Available	Available
Manual data input	Available	
Online acceleration/Deceleration	Available	Available
Mirror effect cutting	Available	
Tool radius compensation	Available	
Boring canned cycle	Available	
Soft over travel limits	Available	
Feed rate commands	Either mm/min or mm/rev both possible	
Feedback resolution of axis motor	10000 pulses per revolution	
Feedback of spindle motor	4096 pulses per revolution	
Interpolation of Axis	Two axis at any time	
On Screen Diagnostics	possible	
Output Control in Auto & MDI mode	possible	
Input feedback in Auto Mode	Possible	
On Screen Line Simulation	Possible	
Feed Override	0-150%	
Spindle override	0-100%	

	<p><b>Standard Accessories</b></p> <p>Side Mill &amp; Face Cutter Shank Diameter 20 mm with spare inserts</p> <p>End Mill Cutter (H.S.S) Shank Diameter 12 mm</p> <p>End Mill Cutter (H.S.S) Shank diameter 6 mm</p> <p>Drill Shank diameter 5 mm</p> <p>Collets for cutter (ER 25) Provided</p> <p>Collets Adopter (4 Nos) BT 30 Adopter</p> <p>Automatic Lubrication Pump Provided</p> <p>Coolant Pump + Coolant Oil (1 Ltr) Provided</p> <p>Manual explaining Training, Operations, Experiments and Machine's working Provided</p> <p>Raw Material for trial (Mild Steel Flat 100 x 100 x 12 mm) Provided (10 Nos)</p> <p>Vibration Damping Pads Provided (4 Nos)</p> <p>Tool Kit containing Allen Keys, Screw Driver, Spanner as required in machine Provided (1 Each)</p> <p>Isolation Transformer Provided</p>	
17	Multimedia teachware for CNC technology and interactive CNC machine simulator with console emulator software of popular control system makes : Fanuc, Siemens, Mitsubishi, etc. 1 for faculty, 10 for students	11 Users
18	CNC milling tools assorted	1 set
19	CNC hole machining tools assorted	1 set
20	LCD projector / large screen TV	1 no.