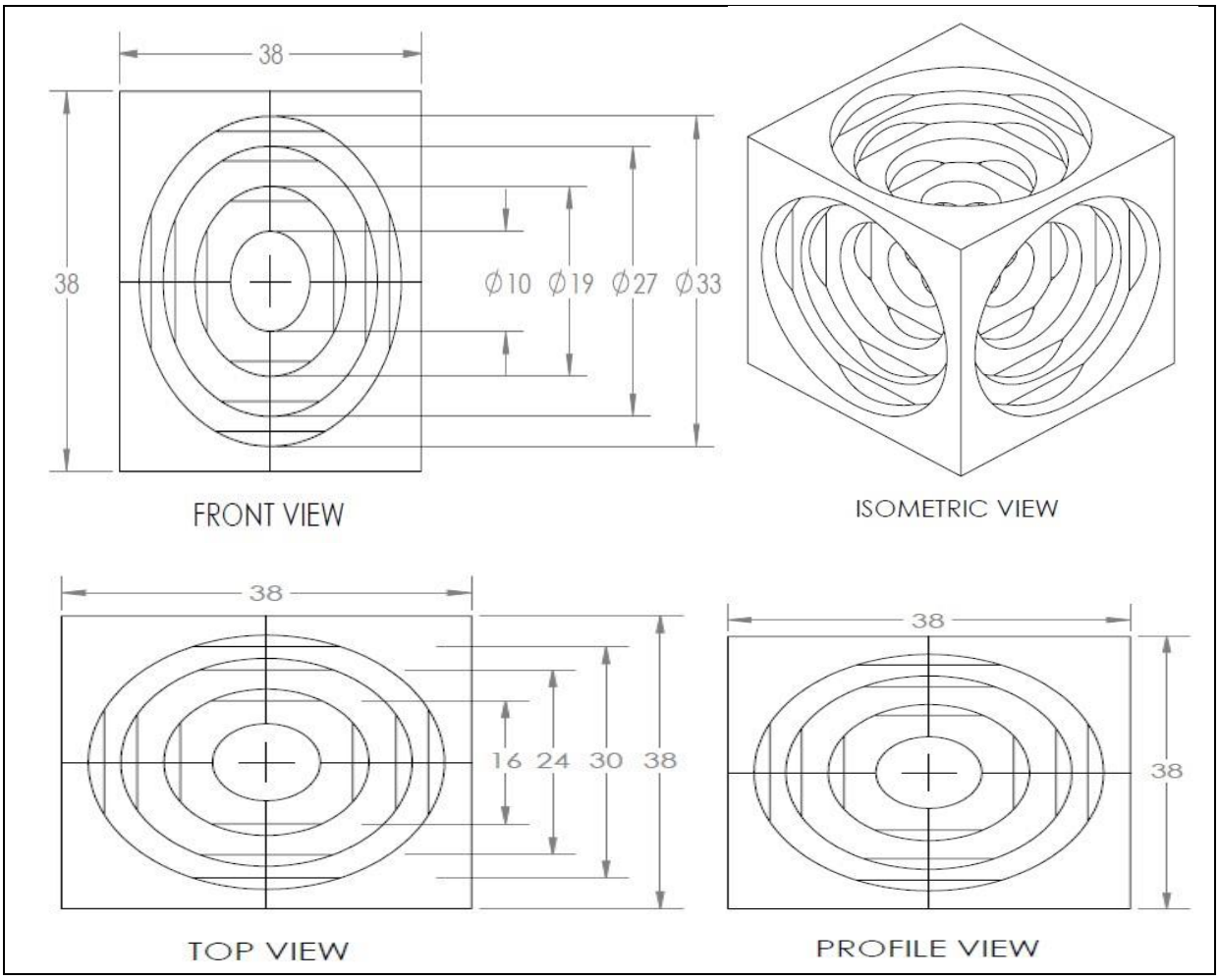
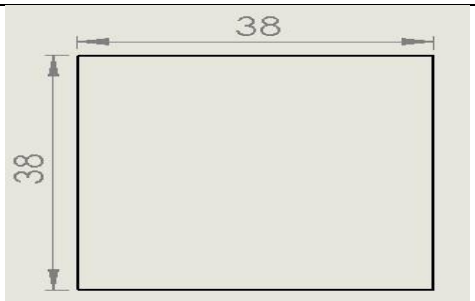
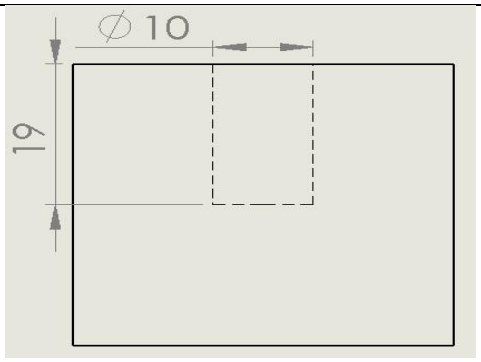
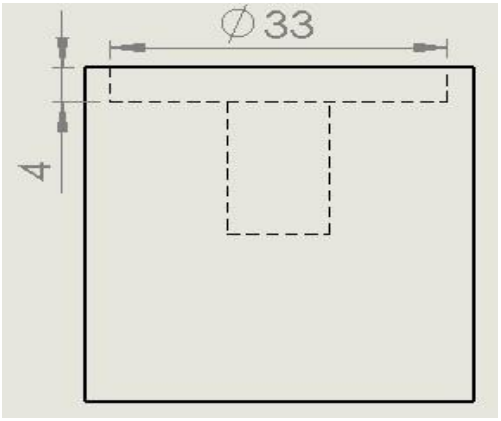
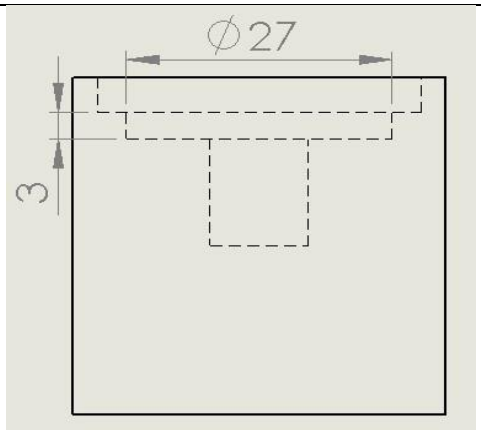
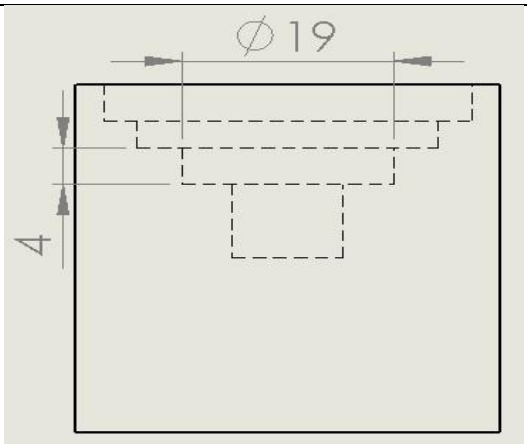
Lecture 5

CNC MILLING JOB



Sr. No	Operation	Job Drawing
1	Raw aluminium cubical block of 38mm length. Set any of the 4 extreme corner point as work zero i.e. X0 Y0 Z0 G00-Rapid Interpolation G00 X38 Y38 Z5 (close proximity) Manually move tool to touch the surface set Z0	

2	Drilling G54 G90 M03 S1000; G00 X19.0 Y19.0 Z50.0; G01 Z5.0 F200; G83 G99 X19.0 Y19.0 Z-30.0 R2.0 Q6.0 F50; G01 G80 Z100.0 F200.0; M30; In G83, Q defines depth of drilling in one cycle. R defines return length after drilling.	
3	Circular interpolation G01 X19.0 Y19.0 Z50.0 F600; G01 Z0.0 F10.0; M98 P80502; P8 (times) 0502(Program No.) O0502 G91 G01 Z-0.5 F1.5; G90 G01 X19.0 Y19.0 F200; G41 G01 X23.25; G03 X23.25 Y19.0 I-4.25 J0.0; G90 G01 X27.5; G03 X27.5 Y19.0 I-8.5 J0.0; M99; Create 33mmdiameter hole up to 4mm depth using circular interpolation end milling operation.	
4	Circular interpolation G01 X19. Y19. F200; M98 P60503; O0503 G91 G01 Z-0.5 F1.5; G90 G01 X19.0 Y19.0 F100; G41 G01 X24.5; G03 X24.5 Y19.0 I-5.5 J0.0; M99; Create 27mm diameter hole up to 3mm depth using circular interpolation end milling operation.	
5	Circular interpolation G01 X19.0 Y19.0 F200; M98 P80504; O0504 G91 G01 Z-0.5 F1.5; G90 G01 X19.0 Y19.0 F100; G01 X20.5; X20.5 Y19.0 I-1.5 J0.0; M99; Create 19mm diameter hole up to 4mm depth using circular interpolation end milling operation.	

- The above procedure is for Z direction machining.
- The same will be followed for X and Y direction machining.

Important codes

G00- Rapid Traverse

G01- Linear Interpolation

G02- Clockwise Circular Interpolation

G03- Counter Clockwise Circular Interpolation

G41- Radius compensation

G54- Workpiece Coordinate system

G80- Cancel Canned Cycle

G83- Pack drilling

G90 – Absolute coordinate system

G91 – Incremental coordinate system

G99- Return to R point

M03- Spindle Rotation (clockwise)

M04- Spindle Rotation (anti-clockwise)

M05- Spindle Stop

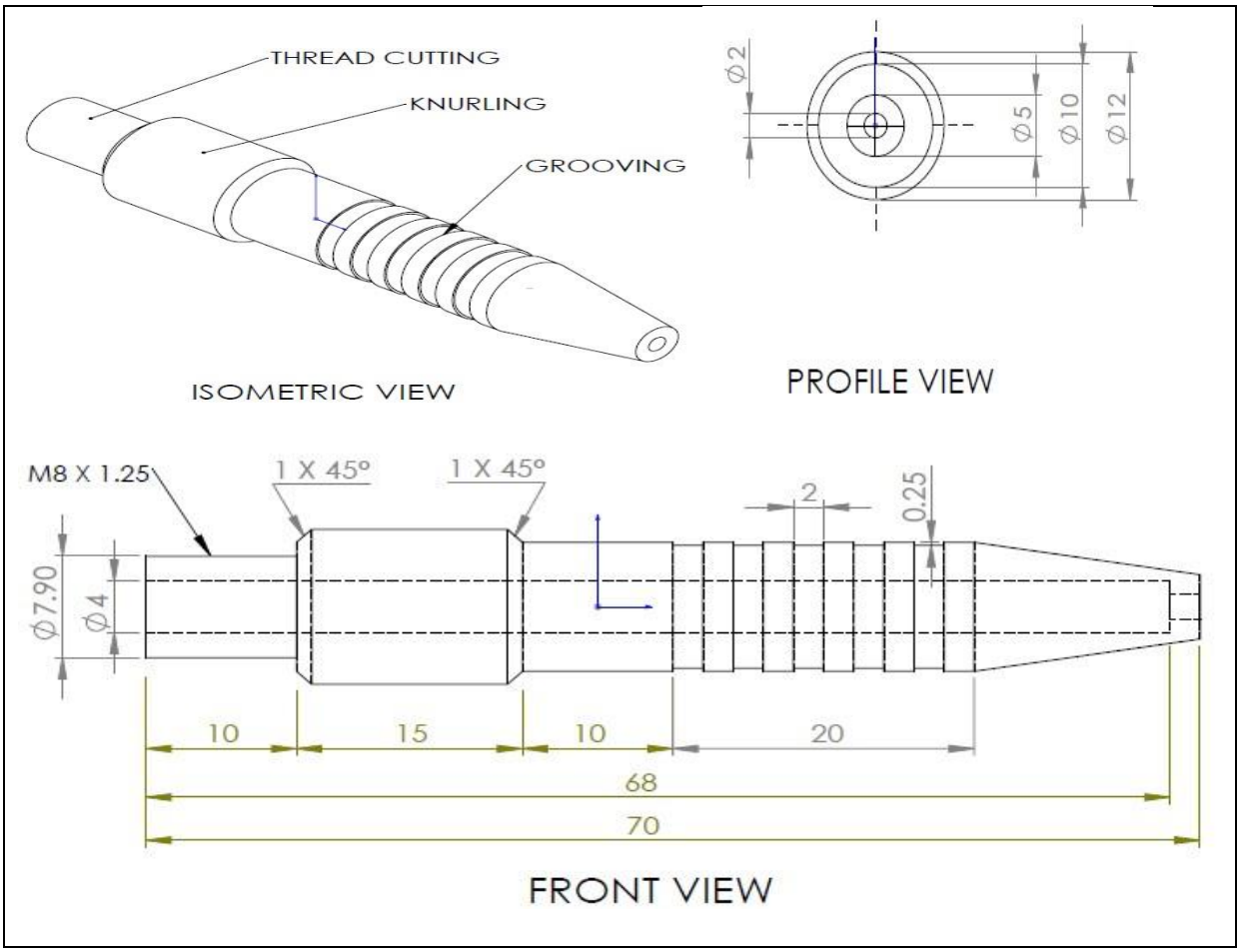
M30- Program Stop

M98- Subprogram Calling

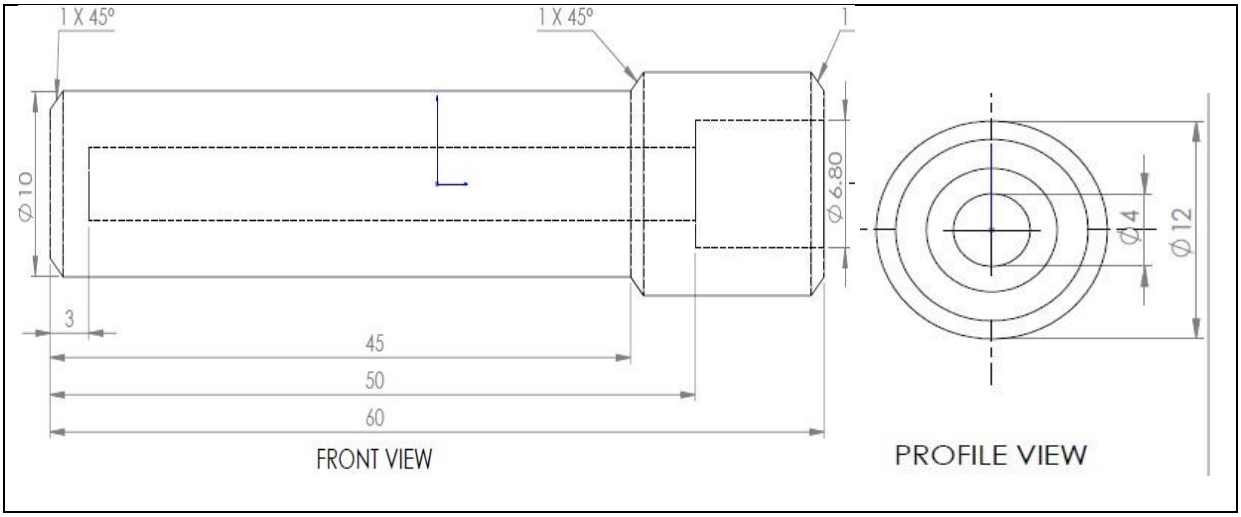
Lecture 6

CNC LATHE JOB

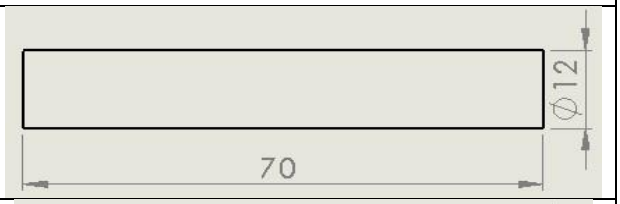
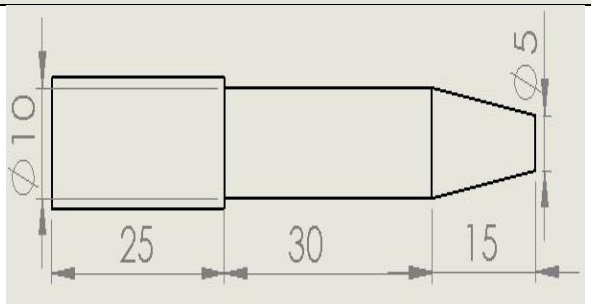
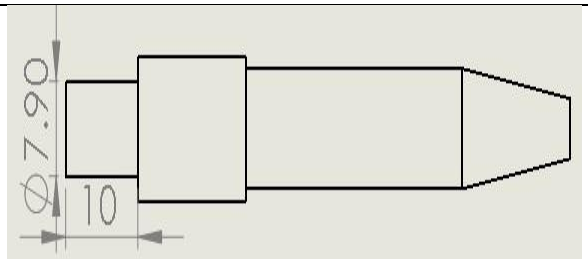
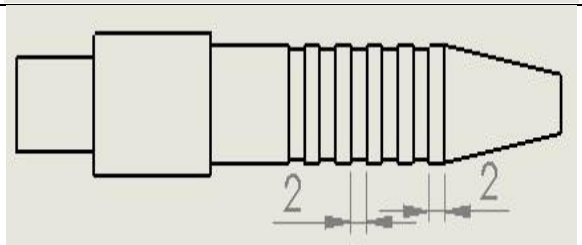
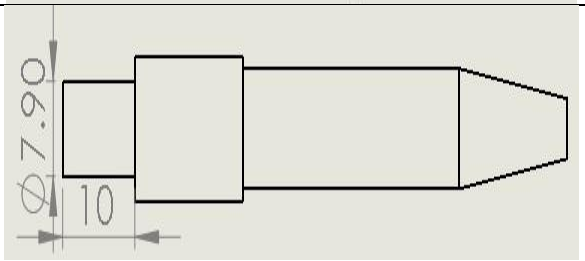
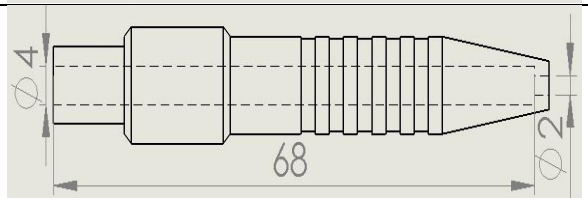
PART A:



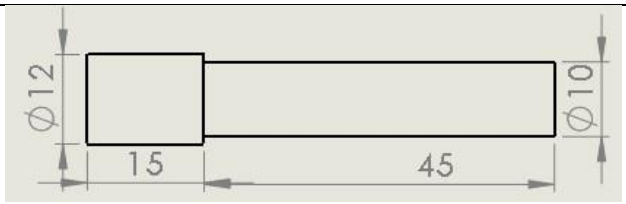
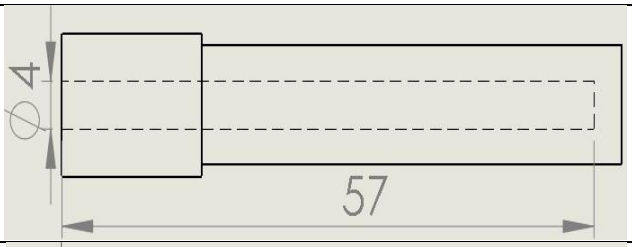
PART B:



PART A: DESCRIPTION

Sr No.	Operation	Job Drawing
1	Aluminium Rod of dia. 12mm Length 70mm Setting up work zero along centre line at 45 mm from free end.	
2	Canned cycle for turning N010 G90 G54; N020 M03 S1000; N030 G00 X20. Z50.0; N040 G73 U3.5 W0.0 R8; N050 G73 P060 Q080 U0. W0. F0.3 S1000; N060 G00 X5. Z45.0; N070 G01 X10. Z30. F0.3; N080 G01 Z0. F0.3;	
3	N010 G90 G54; N020 M03 S1000; N030 G00 X20. Z35.0; N040 G73 U2.05 W0.0 R5; N050 G73 P60 Q70 U0. W0. F0.3 S1000; N060 G00 X7.9 Z25.0; N070 G01 Z15 F0.3;	
4	Grooving N010 G00 X10. Z26.0; N020 F01 X9.5 F0.05; Repeat above code 5 times.	
5	Threading N010 G00 X7.4 Z25.0; N020 G33 X7.4 Z17. F1.25 Knurling N010 G00 X11. Z15.0; N020 G01 Z0. F0.05;	
6	Drilling G00 X0. Z50.0; G01 Z43. F0.2; G00 X0. Z70; G01 Z68. F0.2;	

PART B: DESCRIPTION

Sr No.	Operation	Job drawing
1	N010 G90 G54; N020 M03 S1000; N030 G00 X20. Z60.0; N040 G73 U1.0 W0.0 R3; N050 G73 P060 Q060 U0. W0. F0.3 S1000; N060 G00 X10. Z45.0; N070 G010 Z0. F0.3;	
2	Drilling Dia. 4mm N010 G00 X0. Z57.0; N020 G01 Z0. F0.3;	
3	Drilling Dia. 6.8mm N010 G00 X0. Z10.0; N020 G01 Z0. F0.3; Knurling N010 G00 X11. Z15.0; N020 G01 Z0. F0.05;