| A | B | C | D | E | F |

Figure 1

Q1: Assembly of a valve is shown in the figure 1 and the part drawings are shown in the adjoining figures.

Make the parts and assembly of the valve in the FreeCAD Software.

Arrow in figure 1 shows the front viewing direction.

USE SCALING FACTOR = TOKEN NUMBER

The marks are divided in the following categories:
1. Part Modeling   (22 Marks)
2. Assembly   (06 Marks)
3. Drawing (TechDraw)   (01 Marks)
4. Proper Formatting   (01 Marks)

Proper formatting means saving and submitting your files with file name:
**Token Number_Entry Number_Group Number (e.g 07_2020ME12345_22)**

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI		
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION		
APPD		I SEMESTER	AY 2020-2021	
		MINOR: MCP 100		TITLE: ASSEMBLY
		PAPER 1 : SOFTWARE BASED		ASSEMBLED
			DRAWING NO:	SHEET 1 of 16
ALL DIMENSIONS ARE IN MM.				REV. 0
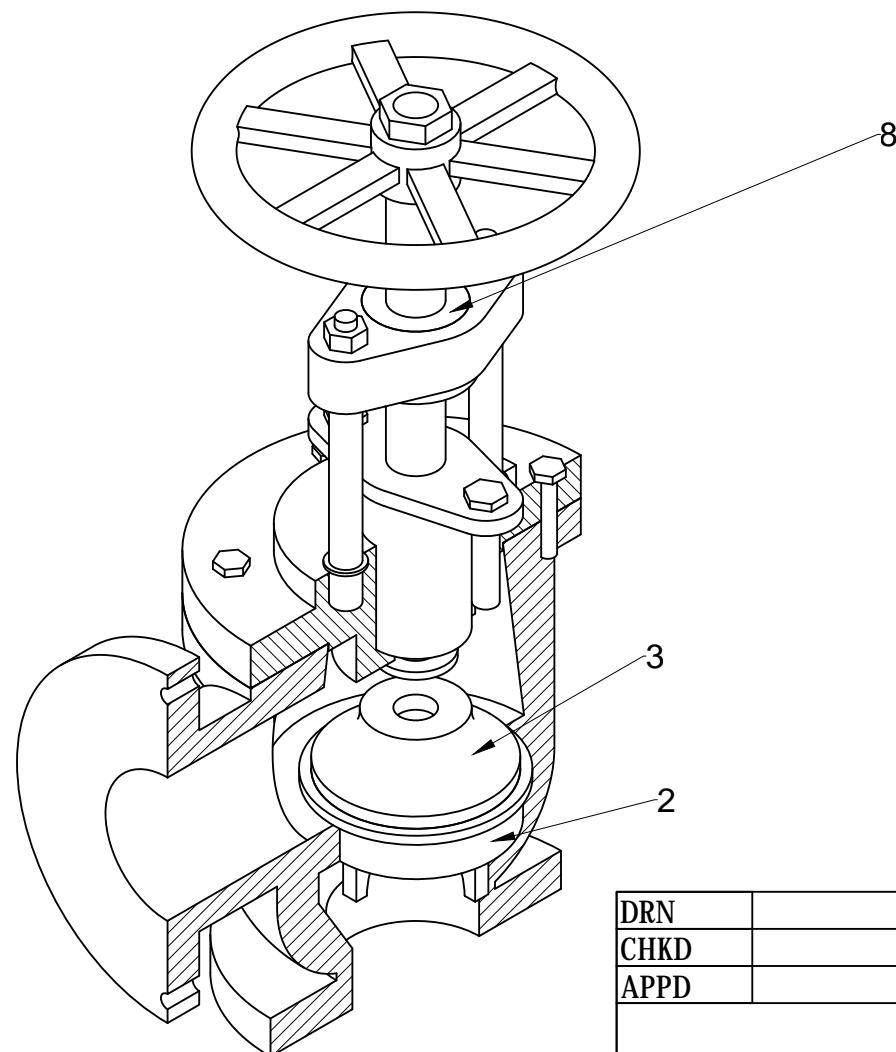
Reference figure

8

3

2

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION
APPD		I SEMESTER AY 2020-2021

		MINOR: MCP 100		TITLE: ASSEMBLY
		PAPER 1 : SOFTWARE BASED		ASSEMBLED
		DRAWING NO:		SHEET 2 of 16
ALL DIMENSIONS ARE IN MM.				REV. 0
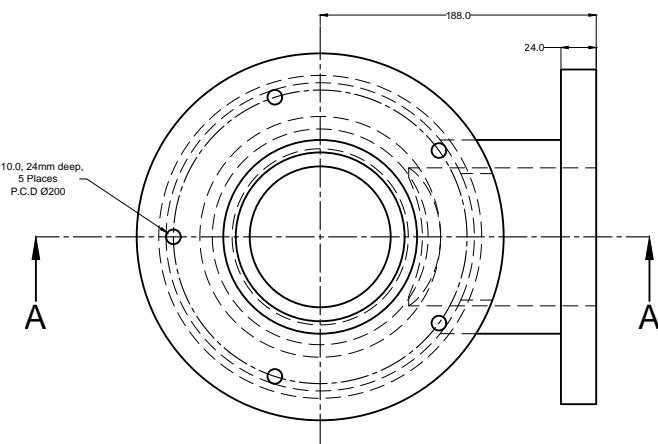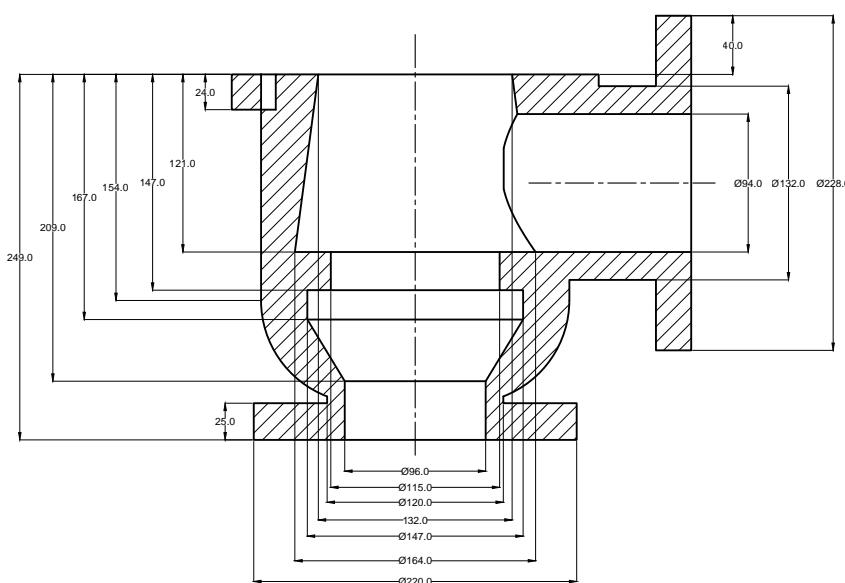
A	B	C	D	E	F

P.C.D = Pitch Circle Diameter

188.0

24.0

Ø10.0, 24mm deep,
5 Places
P.C.D Ø200

A — A

40.0

24.0

121.0

147.0

154.0

167.0

209.0

249.0

Ø94.0 Ø132.0 Ø228.0

25.0

Ø96.0
Ø115.0
Ø120.0
132.0
Ø147.0
Ø164.0
Ø220.0

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI	
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION	
APPD		I SEMESTER AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY
		PAPER 1 : SOFTWARE BASED	PART 1
		DRAWING NO:	SHEET 3 of 16
ALL DIMENSIONS ARE IN MM.			REV. 0

Ø125.0

Ø112.0

Ø100.0

6.0

32.0

Ø115.0

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI		
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION		
APPD		I SEMESTER	AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY	
		PAPER 1 : SOFTWARE BASED	PART 2	
		DRAWING NO:	SHEET 4 of 16	
ALL DIMENSIONS ARE IN MM.			REV. 0	

	A	B	C	D	E	F
1						1
2						2
3						3
4						4
	A	B	C	D	E	F

Ø24.0, 10deep

Ø60.0

Ø112.0

R30.0

R42.0

100.0

68.0

60.0

54.0

8.0

10.0

8.0

100.0
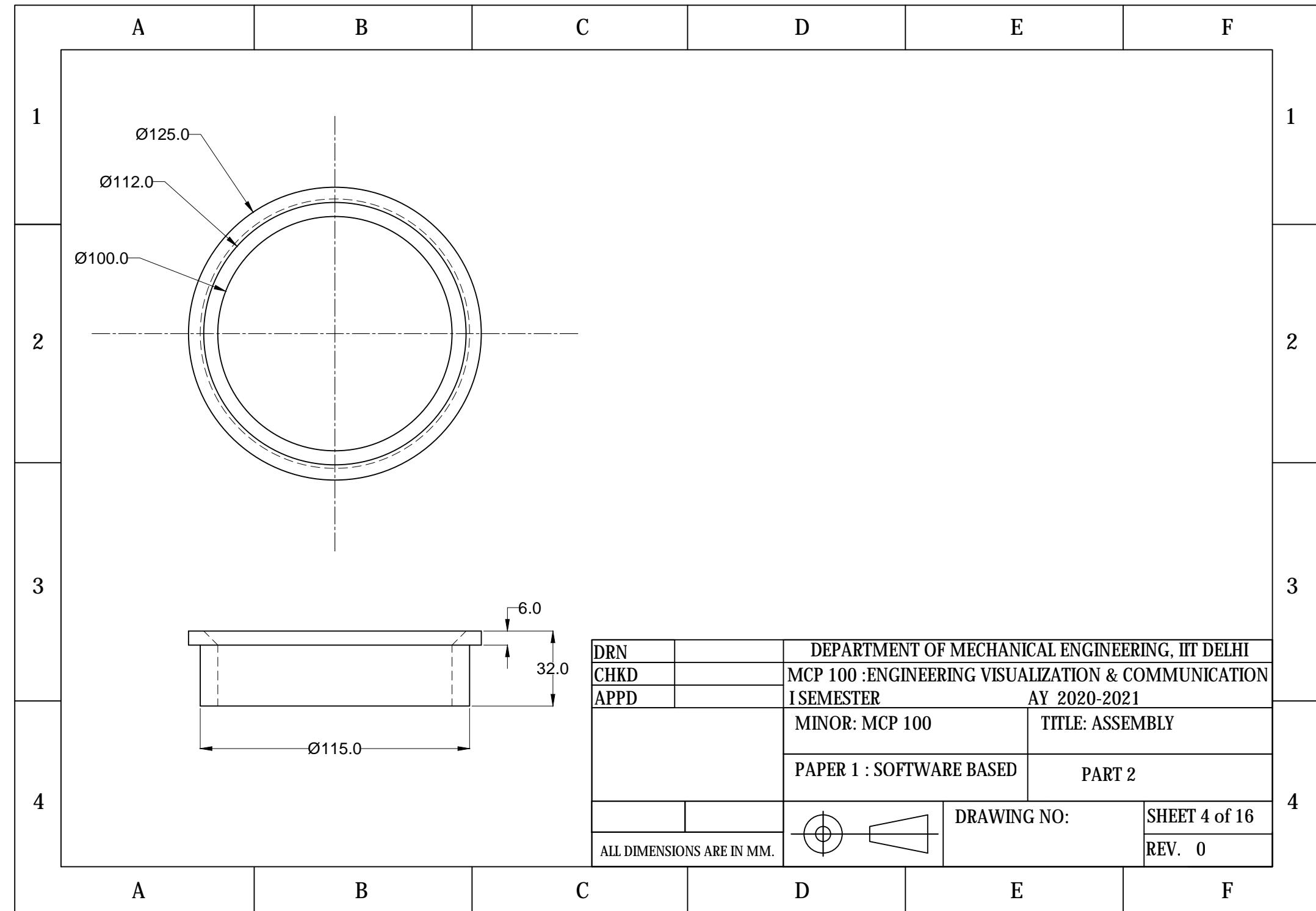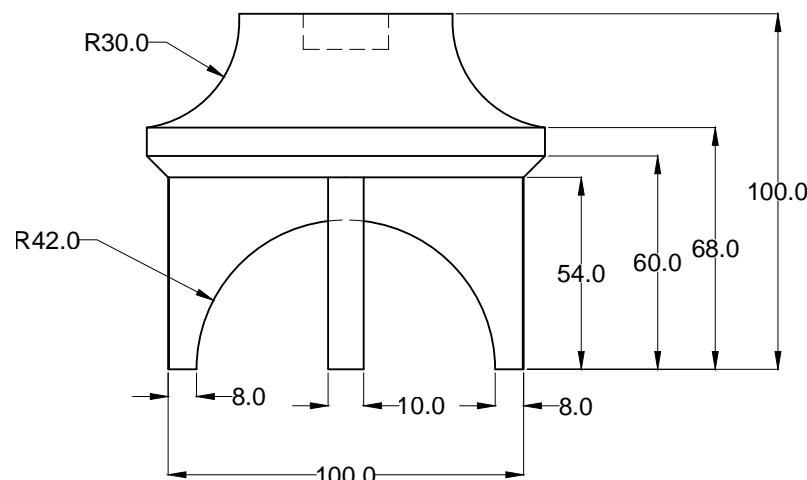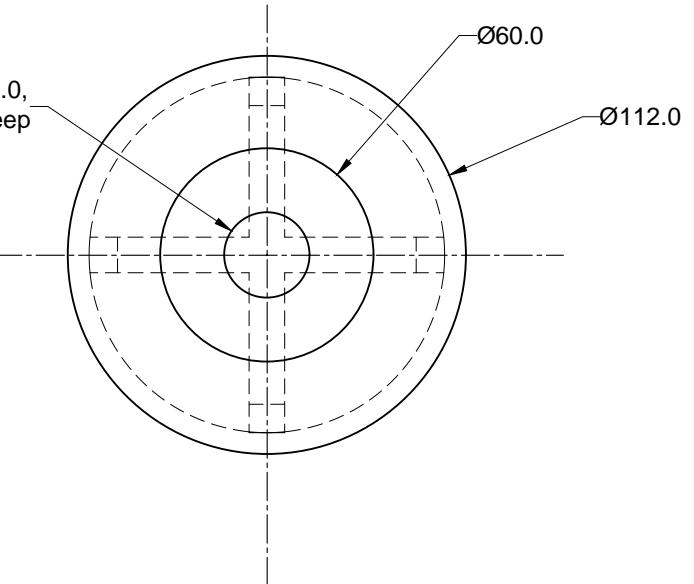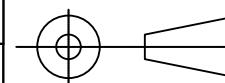
DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI	
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION	
APPD		I SEMESTER AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY
		PAPER 1 : SOFTWARE BASED	PART 3
		DRAWING NO:	SHEET 5 of 16
ALL DIMENSIONS ARE IN MM.			REV. 0

Ø60.0,
68 deep

Ø10.0,
Through all,
P.C.D Ø200

Ø15,
25 deep,
P.C.D Ø106
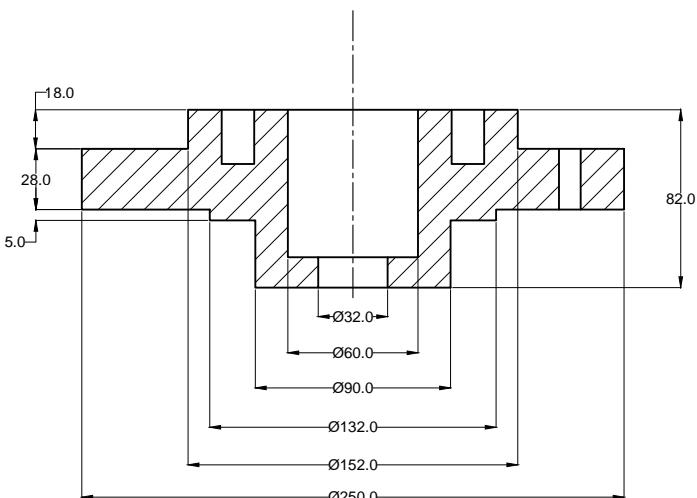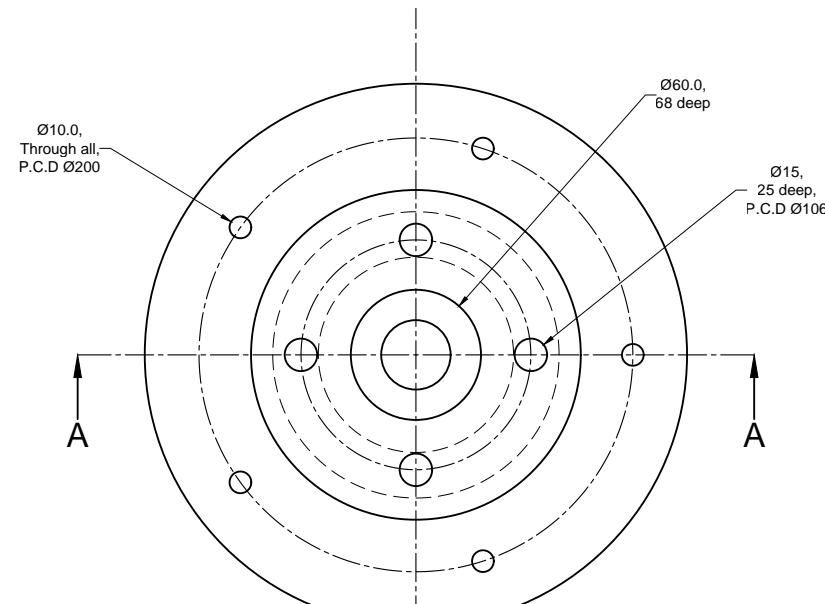
A

A

P.C.D = Pitch Circle Diameter

18.0

28.0

5.0

82.0

Ø32.0
Ø60.0
Ø90.0
Ø132.0
Ø152.0
Ø250.0

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI	
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION	
APPD		I SEMESTER AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY
		PAPER 1 : SOFTWARE BASED	PART 4
		DRAWING NO:	SHEET 6 of 16
ALL DIMENSIONS ARE IN MM.			REV. 0
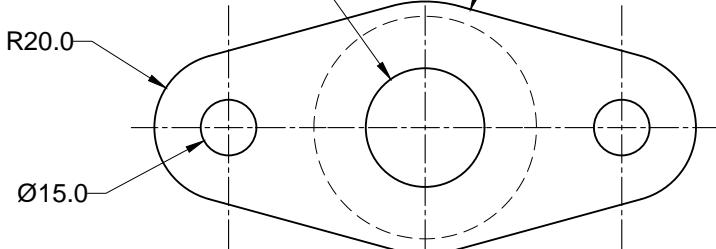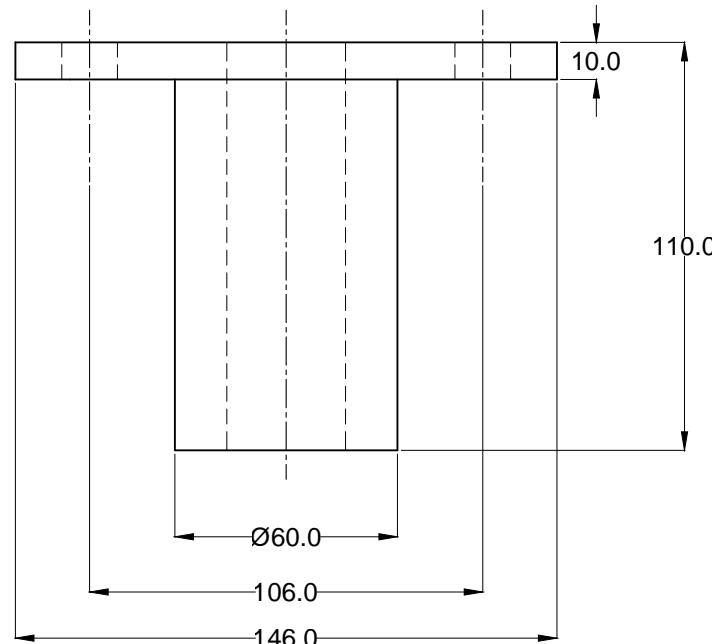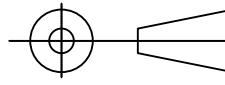
A	B	C

Top view dimensions:
- R34.0
- Ø32.0
- R20.0
- Ø15.0

Front view dimensions:
- 10.0
- 110.0
- Ø60.0
- 106.0
- 146.0

A	B	C	D	E	F

R40.0

Ø58.0

R20.0

Ø12.0

34.0

106.0

146.0
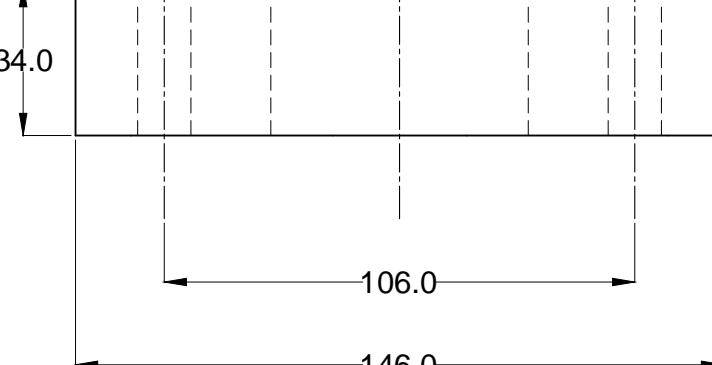
DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI	
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION	
APPD		I SEMESTER AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY
		PAPER 1:SOFTWARE BASED	PART 6
		DRAWING NO:	SHEET 8 of 16
ALL DIMENSIONS ARE IN MM.			REV. 0
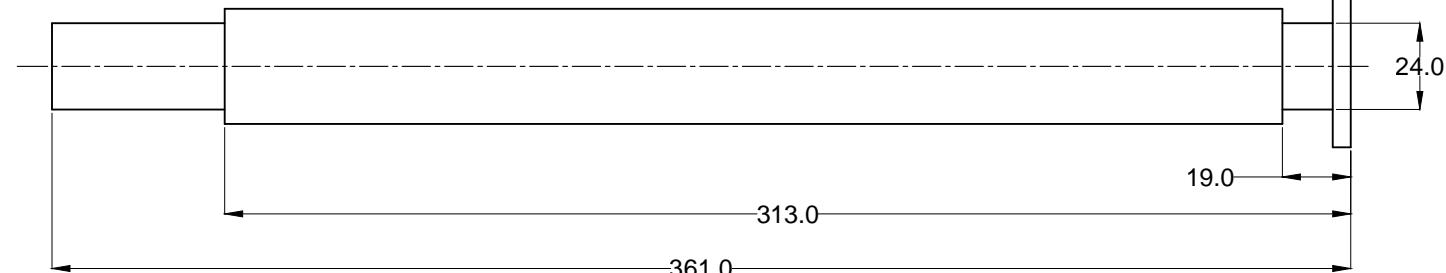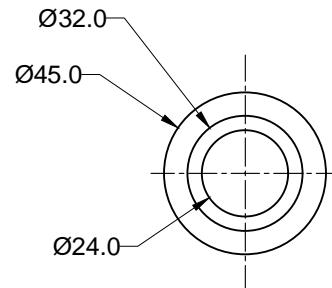
Ø32.0
Ø45.0
Ø24.0

5.0
24.0
19.0
313.0
361.0

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI			
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION			
APPD		I SEMESTER	AY 2020-2021		
		MINOR: MCP 100		TITLE: ASSEMBLY	
		PAPER 1 : SOFTWARE BASED		PART 7	
			DRAWING NO:		SHEET 9 of 16
ALL DIMENSIONS ARE IN MM.					REV. 0
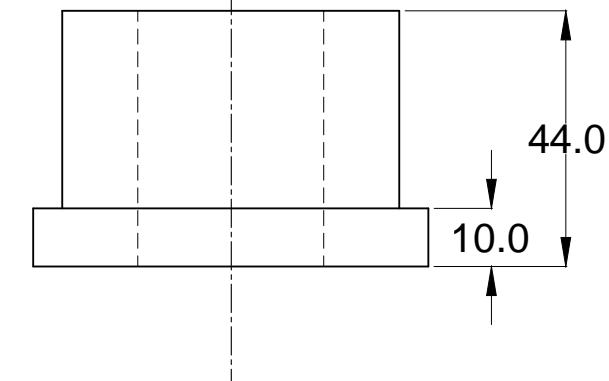
Ø68.0

Ø32.0

Ø58.0

44.0

10.0

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI		
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION		
APPD		I SEMESTER	AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY	
		PAPER 1 : SOFTWARE BASED	PART 8	
		DRAWING NO:	SHEET 10 of 16	
ALL DIMENSIONS ARE IN MM.			REV. 0	
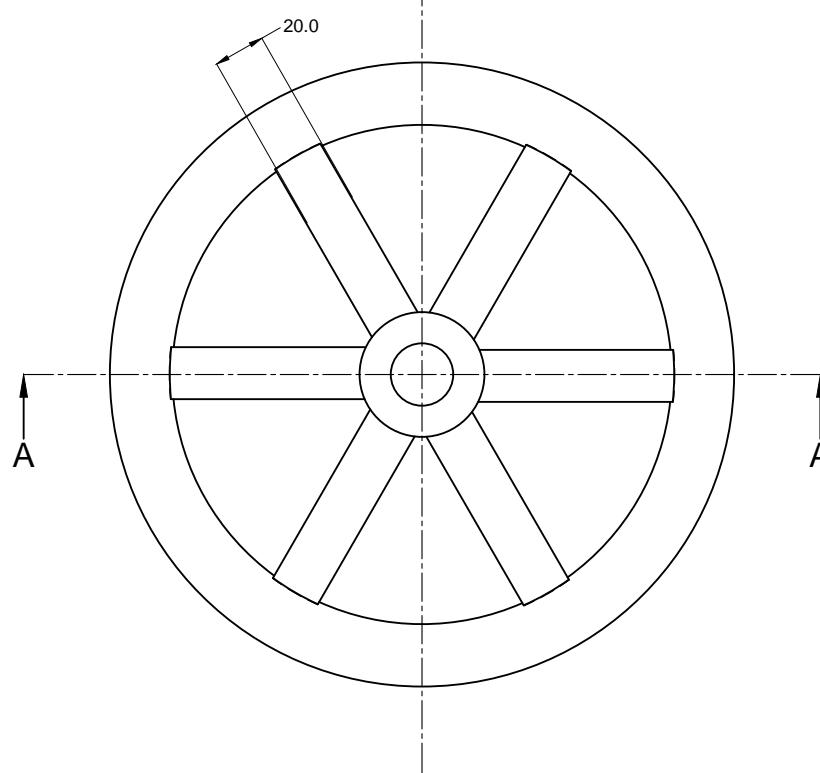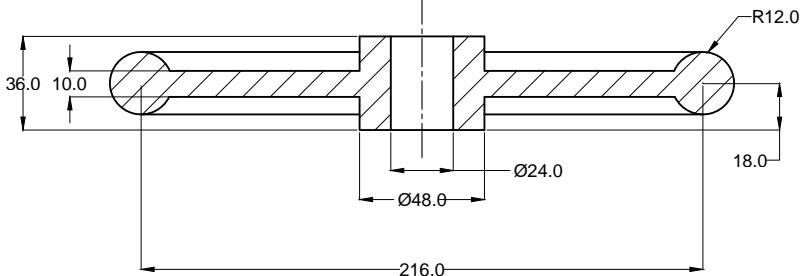
DRN		**DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI**		
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION		
APPD		I SEMESTER	AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY	
		PAPER 1 : SOFTWARE BASED	PART 9	
		DRAWING NO:	SHEET 11 of 16	
ALL DIMENSIONS ARE IN MM.			REV. 0	

Dimensions noted on drawing: 20.0, A, A, R12.0, 36.0, 10.0, Ø24.0, Ø48.0, 18.0, 216.0

Ø12.0
Ø24.0

No.of Quantity = 2

187.0

135.0 137.0

25.0 27.0

Ø15.0

10.0

No.of Quantity = 5

5.0

57.0

Ø10.0
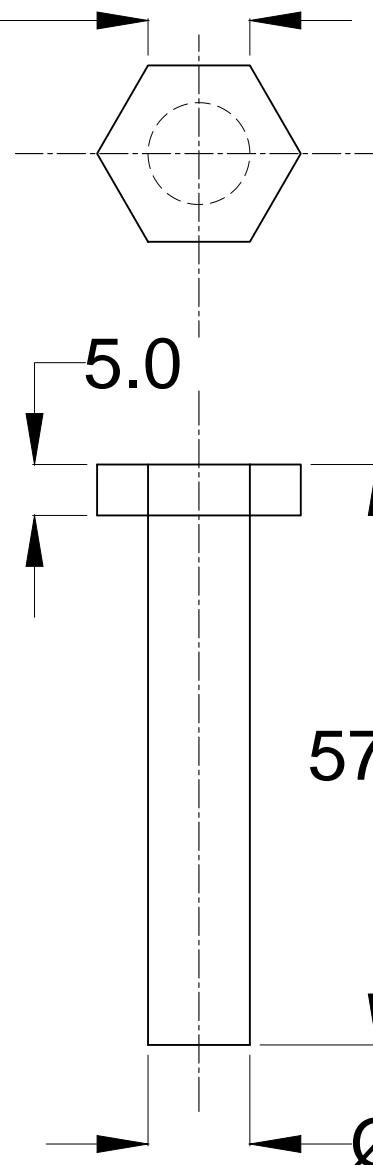
DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI	
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION	
APPD		I SEMESTER AY 2020-2021	
		MINOR: MCP 100	TITLE: ASSEMBLY
		PAPER 1 : SOFTWARE BASED	PART 11
		DRAWING NO:	SHEET 13 of 16
ALL DIMENSIONS ARE IN MM.			REV. 0

12.0

5.0

No.of Quantity = 2

72.0

Ø15.0

12.0

Ø12.0

No.of Quantity = 2

10.0

20.0

Ø24.0

No.of Quantity = 1

12.0

DRN		DEPARTMENT OF MECHANICAL ENGINEERING, IIT DELHI		
CHKD		MCP 100 :ENGINEERING VISUALIZATION & COMMUNICATION		
APPD		I SEMESTER AY 2020-2021		
		MINOR: MCP 100		TITLE: ASSEMBLY
		PAPER 1 : SOFTWARE BASED		PART 14
			DRAWING NO:	SHEET 16 of 16
ALL DIMENSIONS ARE IN MM.				REV. 0