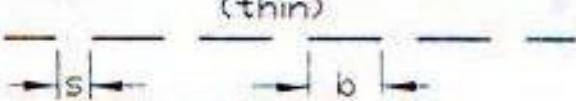
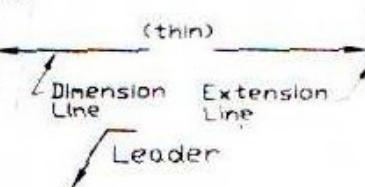
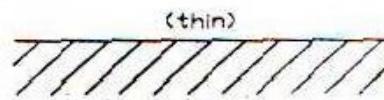
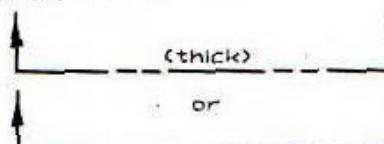
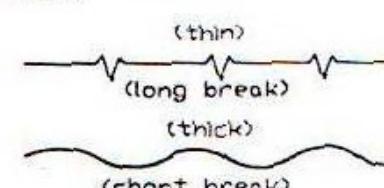
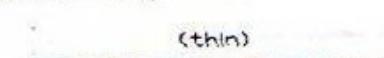


# Introduction to Different Lines

SI No.	Types of Line	Usage
1	Visible line / object line (thick) 	to indicate all visible outlines of an object. It shows the shape of an object.
2	Hidden line / dashed line (thin)  $s = 1 \text{ to } 2 \text{ mm}$ $b = 2s \text{ to } 4s$	to represent the hidden edge of an object. It must begin and end with a dash touching the visible lines. Dashes that show hidden lines usually touch each other at intersection.
3	Center line (thin)  $s = 1 \text{ to } 2 \text{ mm}$ $b = 2s \text{ to } 4s$ $w = 3b \text{ to } 10b$	to show the center line of holes, pitch line.

# Introduction to Different Lines

Sl No.	Types of Line	Usage
4	Extension line, dimension line and Leaders 	to show dimension of an object extension line, dimension line and leaders are used.
5	Section line 	to indicate the cut portion of an object.
6	Cutting plane line 	to show the imaginary cutting of an object
7	ISO Cutting Plane Line 	
8	Break line 	to show a break on the object. It shortens the view of a long part.
9	Phantom line/repeat line 	to show the alternate position of an object or the position of an adjacent part.

# Introduction to Different Lines With Different Examples

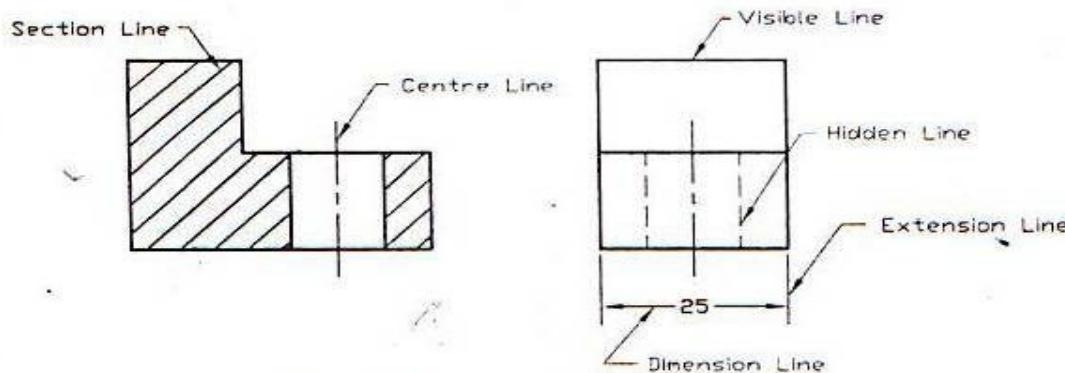


Figure 1.25: Usage of Some Common Lines

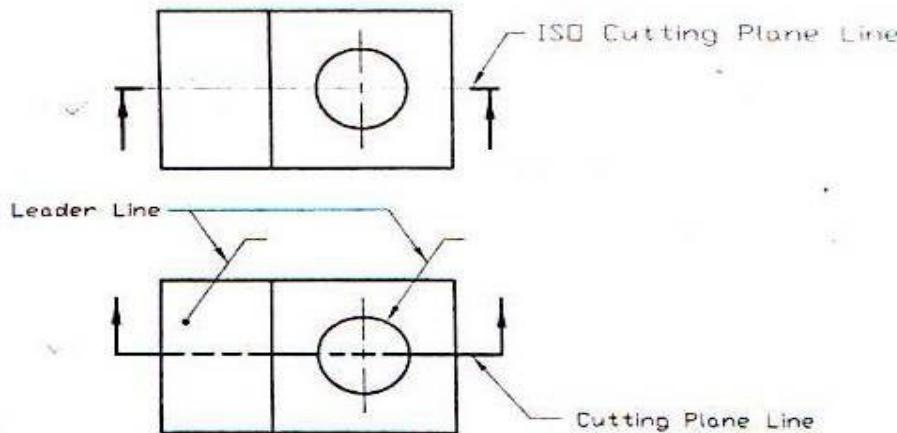
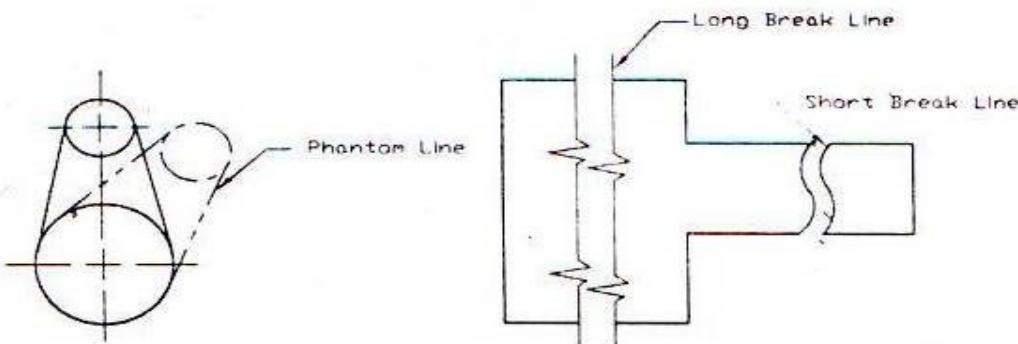


Figure 1.26: Usage of Leader and Cutting Plane Lines



## Introduction to Different Lines With Different Examples

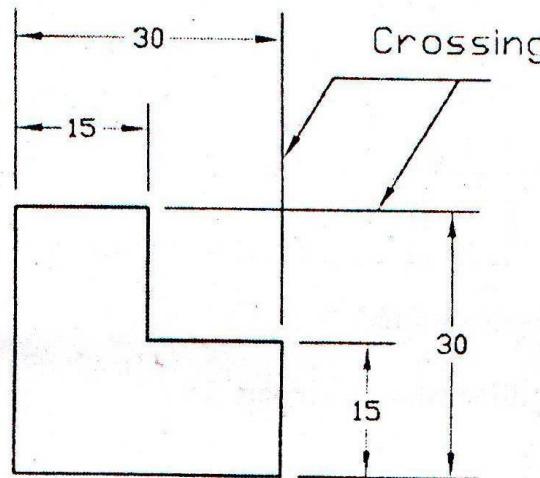


Figure 2.3: Crossing of Extension Lines

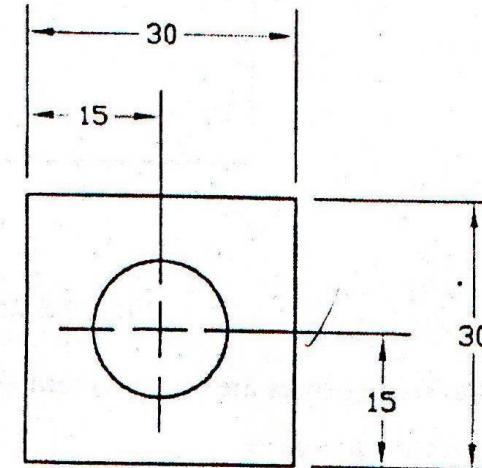


Figure 2.4: Center Line as Extension Line

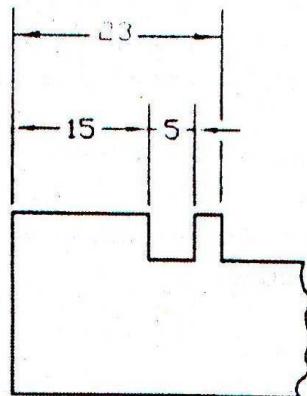


Figure 2.5: Break in Extension Line

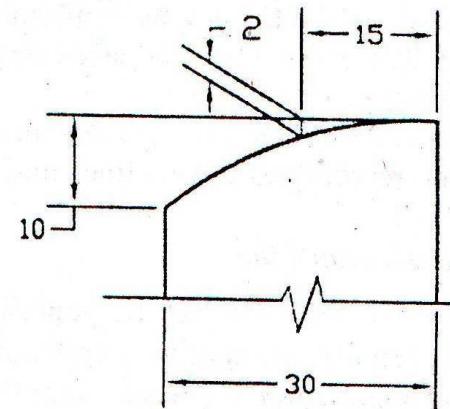


Figure 2.6: Oblique Extension Line

## How to prepare Drawing Sheet

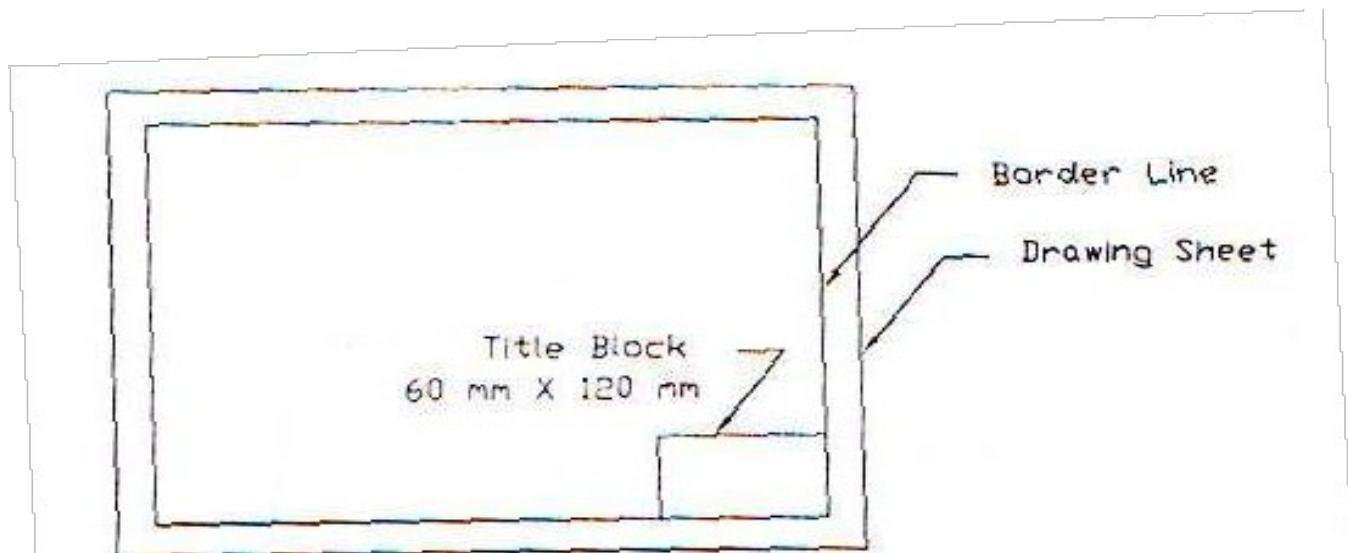
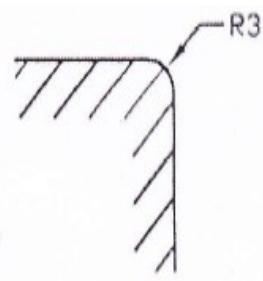


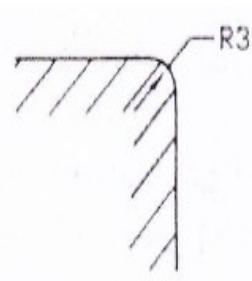
Figure 1.29. Layout of Drawing Sheet

BANGLADESH UNIVERSITY OF ENGG. & TECH., DHAKA		
TITLE:		
SCALE:	MAT:	
NAME:		
DEPT:	ROLL:	DATE:

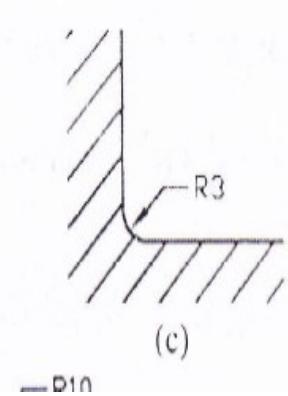
# Dimensioning in Radii



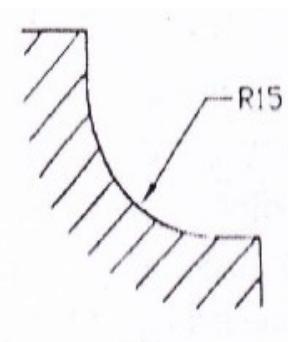
(a)



(b)

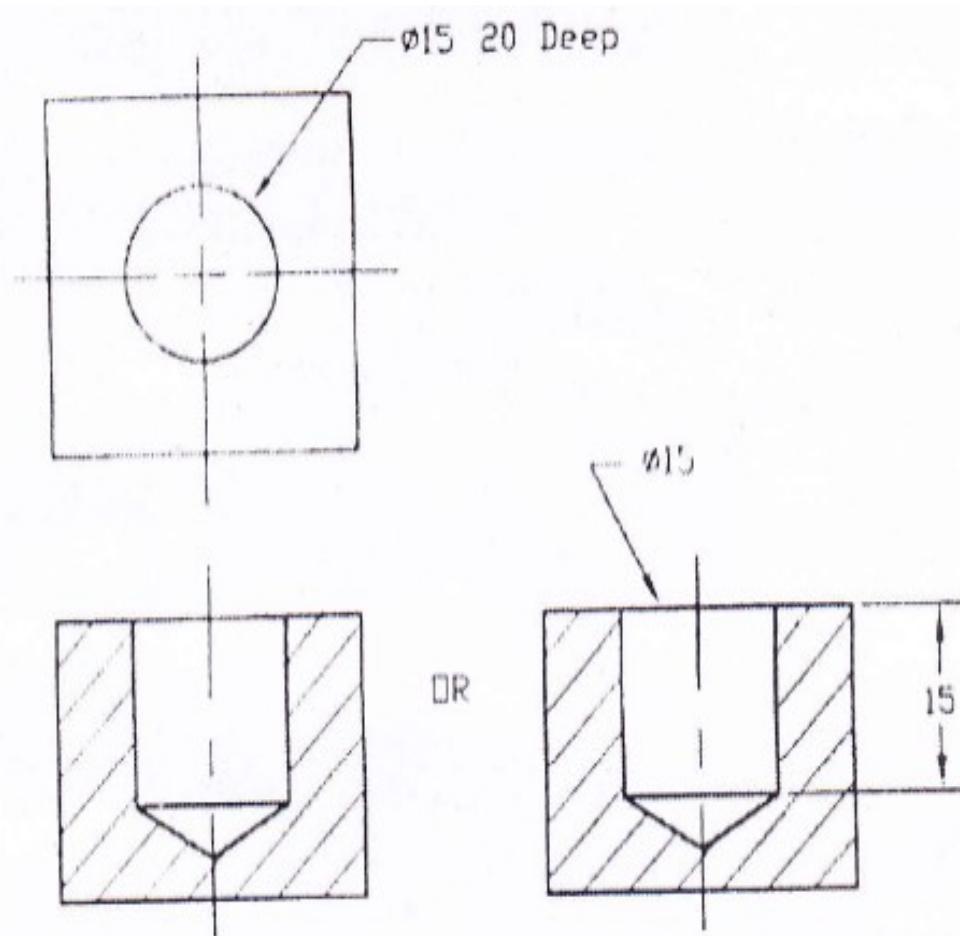


(c)



(d)

# Dimensioning in Cylindrical Holes



# Dimensioning in Cylindrical Holes

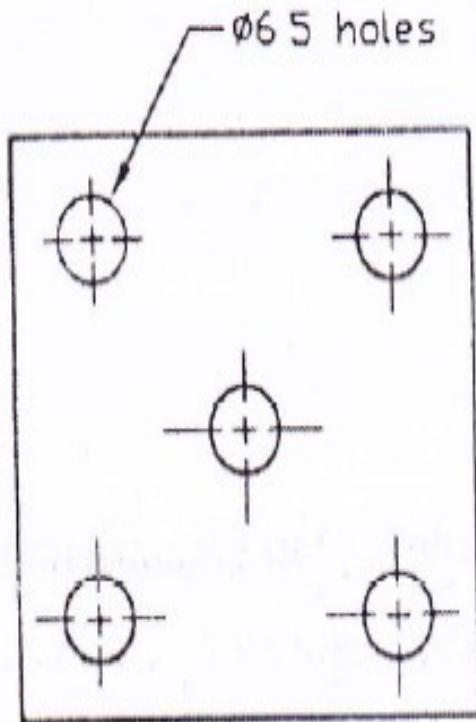


Figure 2.23: Group of Holes

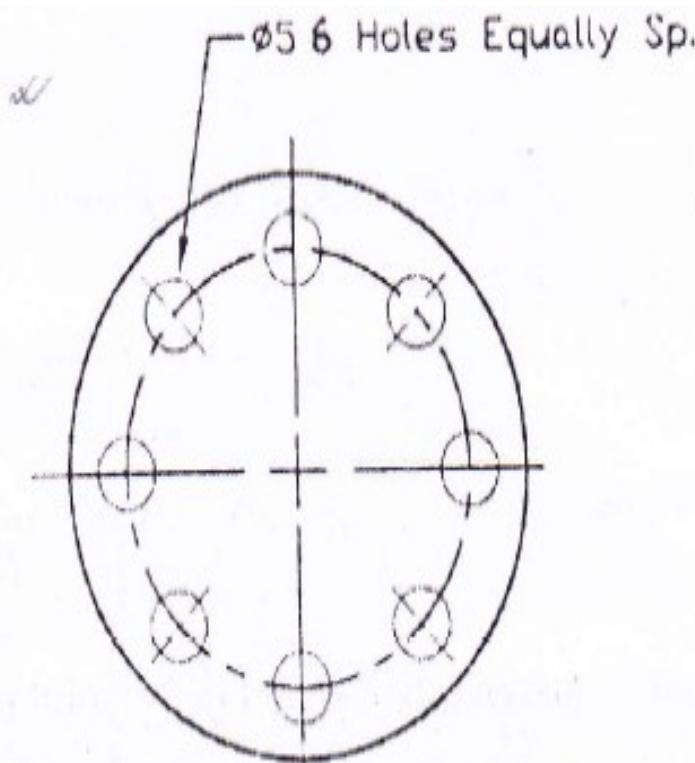
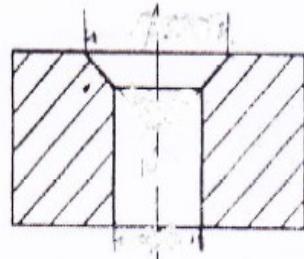
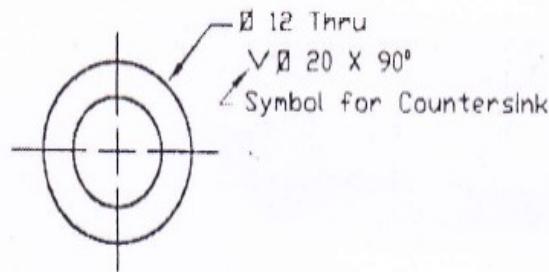
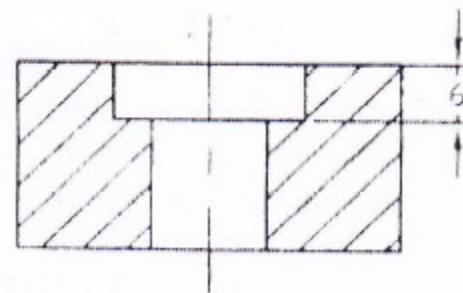
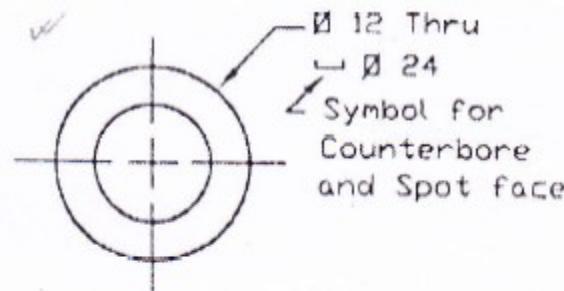


Figure 2.24: Group of Holes

# Dimensioning in Countersink, Counter bore and spot face



Dimensioning in Countersink



Dimensioning in Counter bore

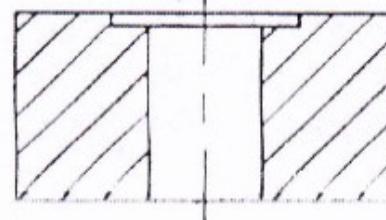
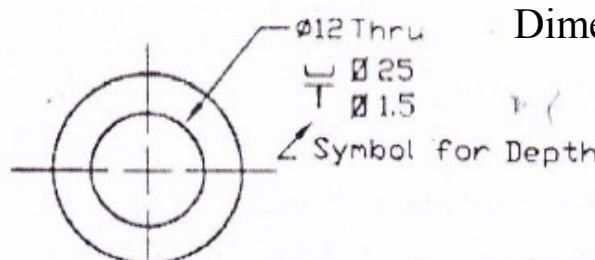


Figure 2.29: Dimensioning in Spot face

# Orthographic Drawing(1<sup>st</sup> Angle Projection View)

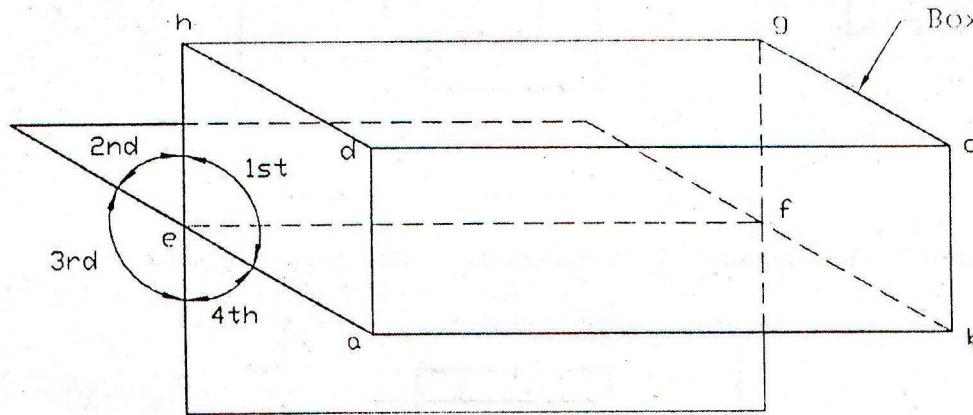


Figure 3.9: Six-Sided Transparent Box in First Angle Projection

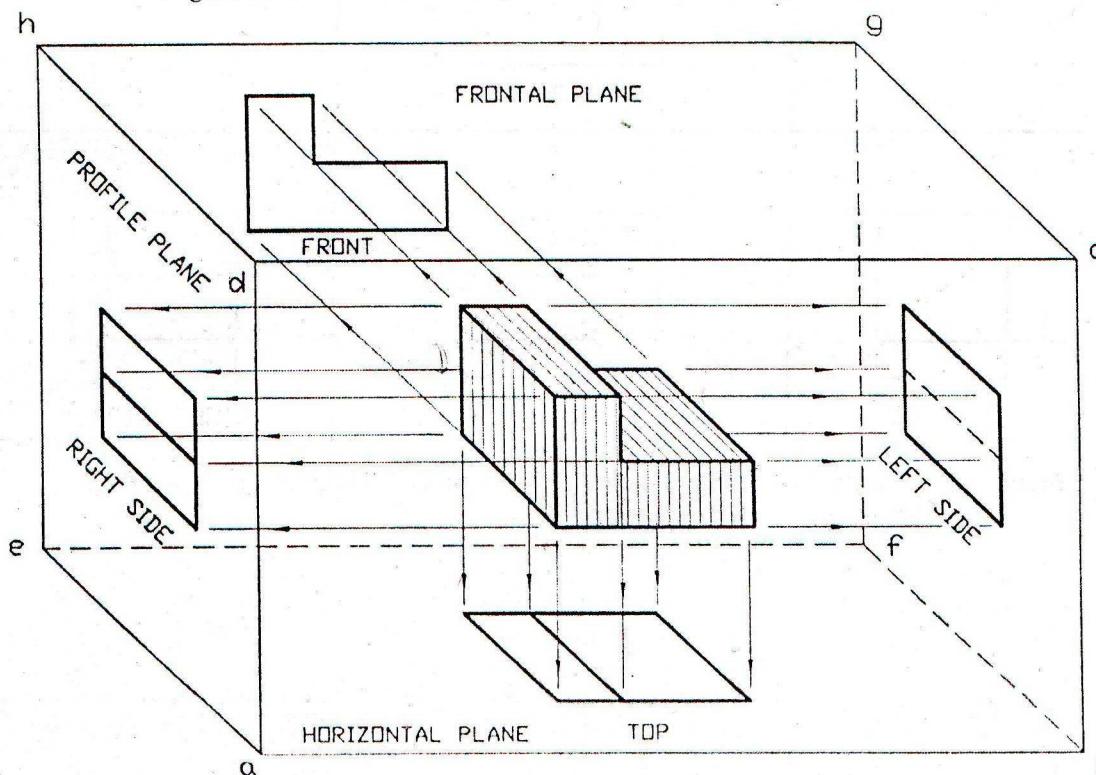


Figure 3.10: Views in First Angle Projection

# **Orthographic Projection**

# Orthographic Drawing(1<sup>st</sup> Angle Projection View)

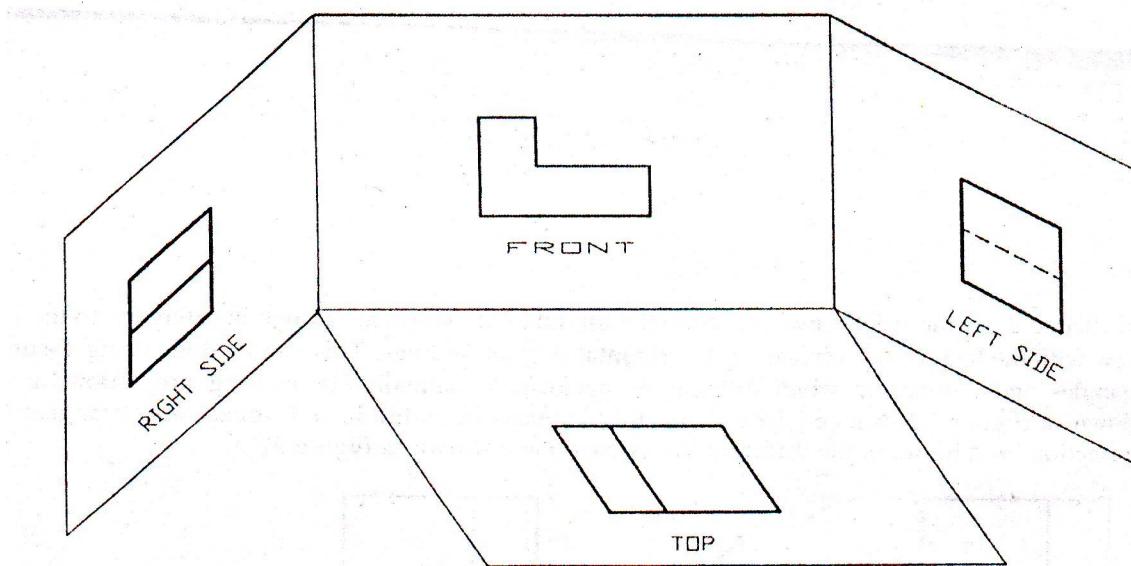


Figure 3.11: Views on Sides of Unfolding Box in First Angle Projection

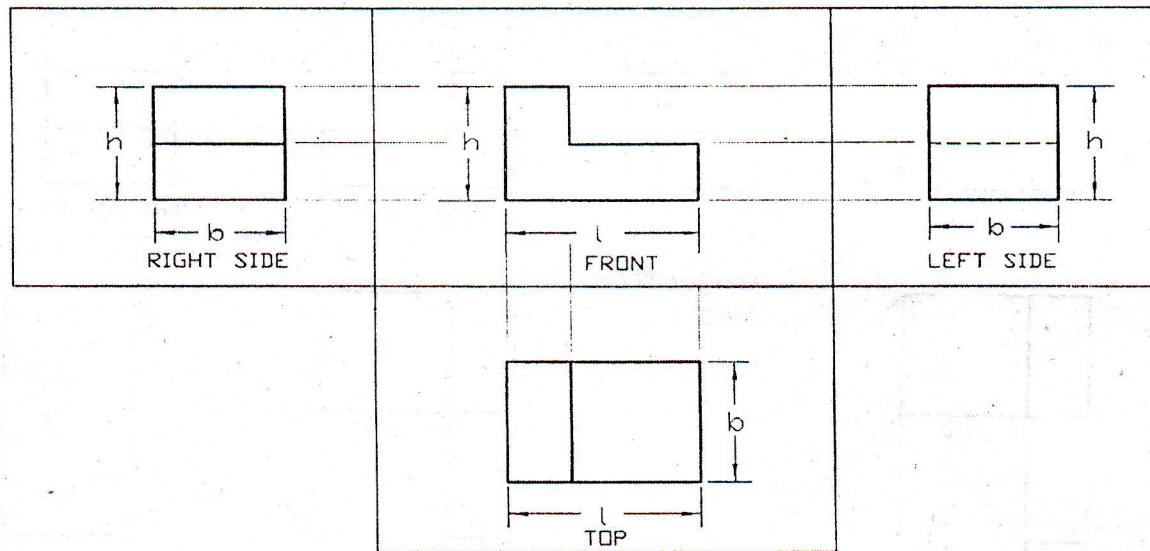


Figure 3.12: Relative Positions of Views on Sides of Unfolding Box in First Angle Projection

# Orthographic Drawing(3<sup>rd</sup> Angle Projection View)

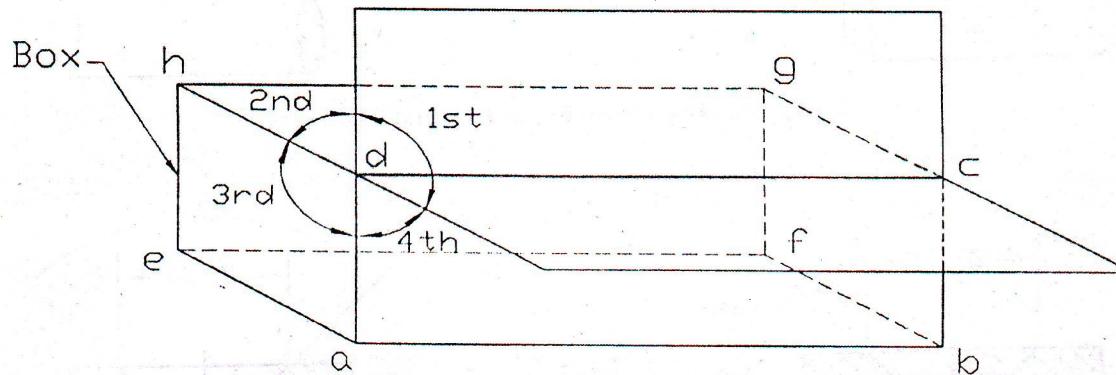


Figure 3.5: Six-Sided Transparent Box in Third Angle Projection

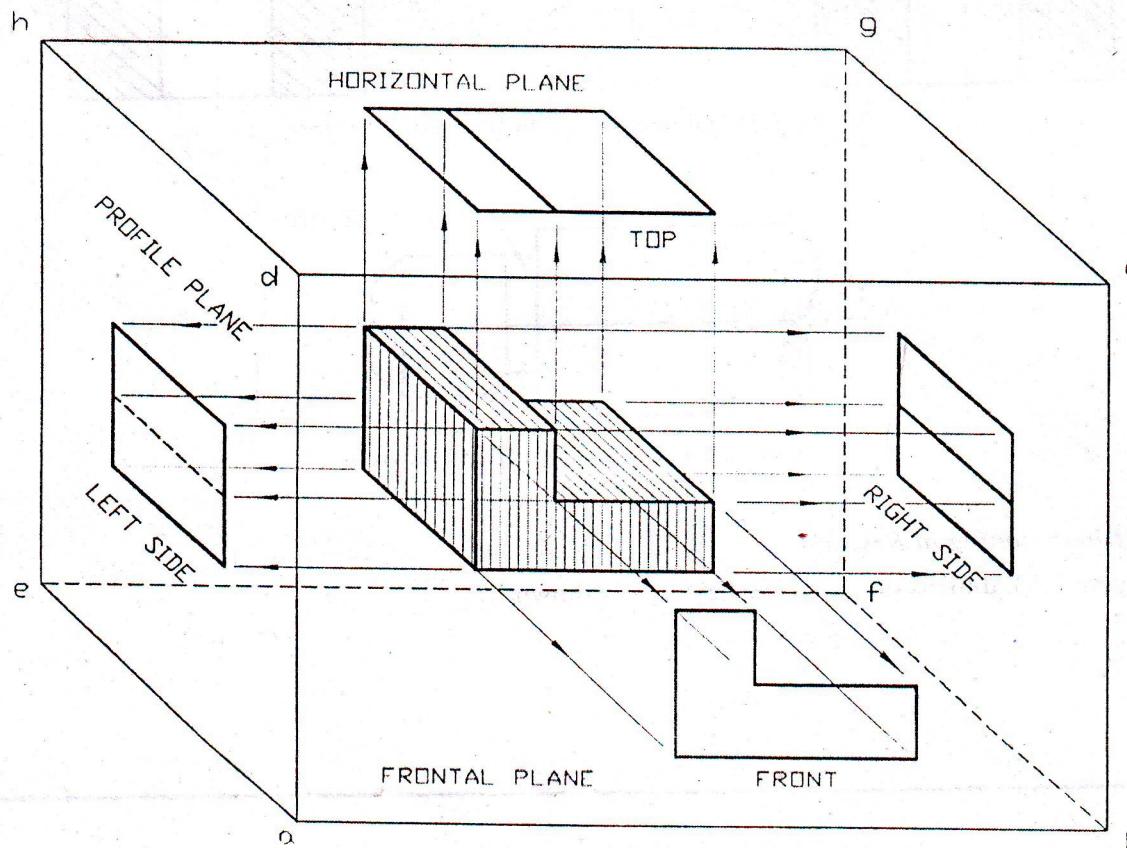


Figure 3.6: Views in Third Angle Projection

# Orthographic Drawing(3<sup>rd</sup> Angle Projection View)

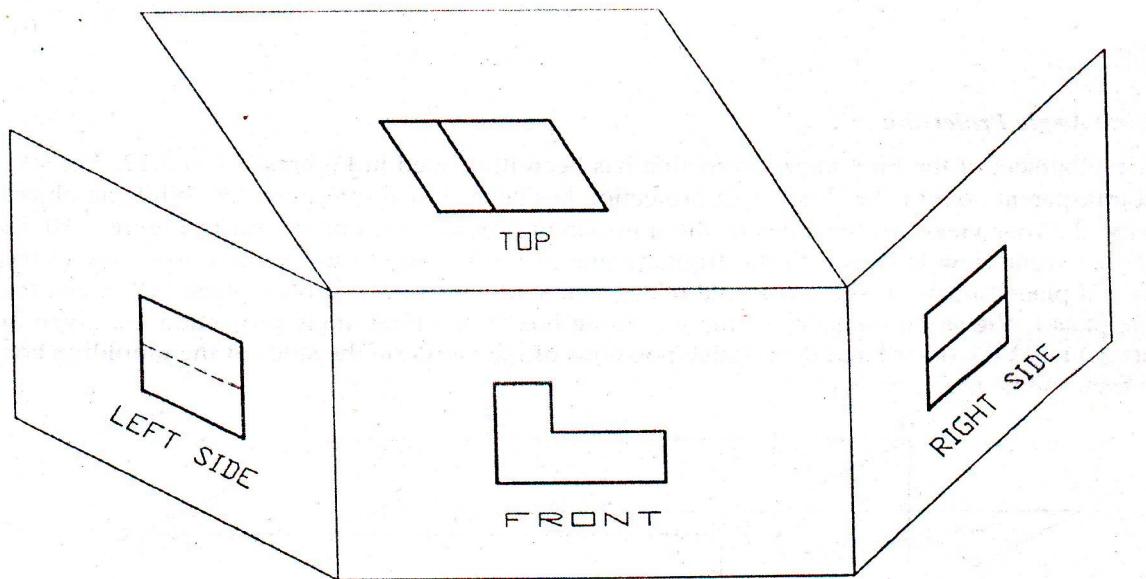


Figure 3.7: Views on Sides of Unfolding Box in Third Angle Projection

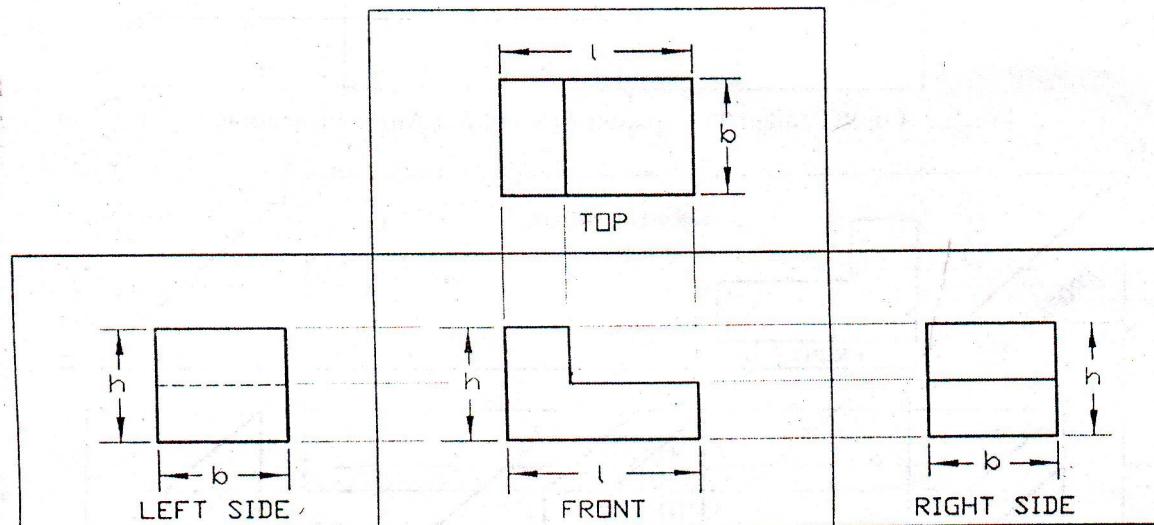
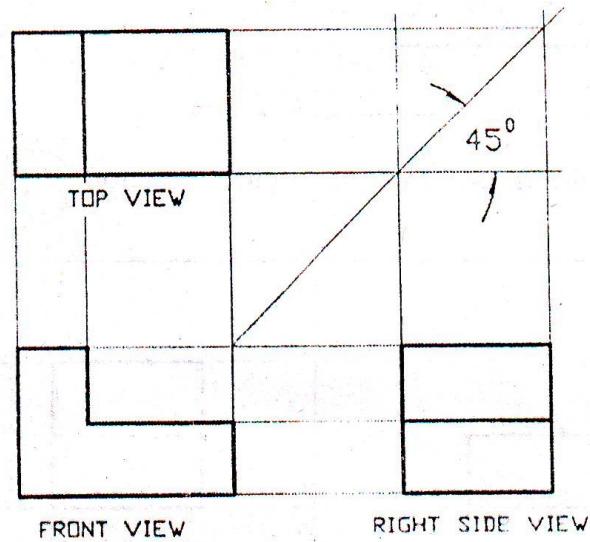
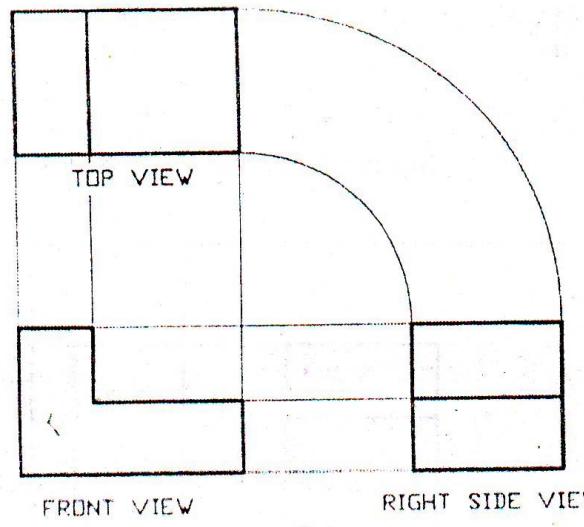


Figure 3.8: Relative Positions of Views on Sides of Unfolding Box in Third Angle Projection

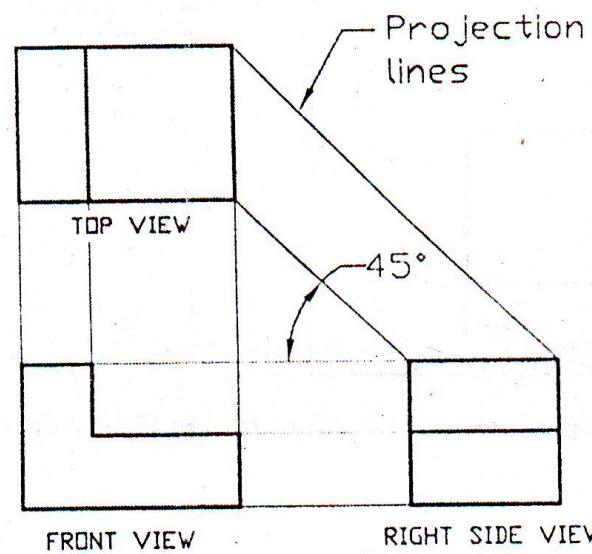
# Rules & Regulations of Orthographic projection



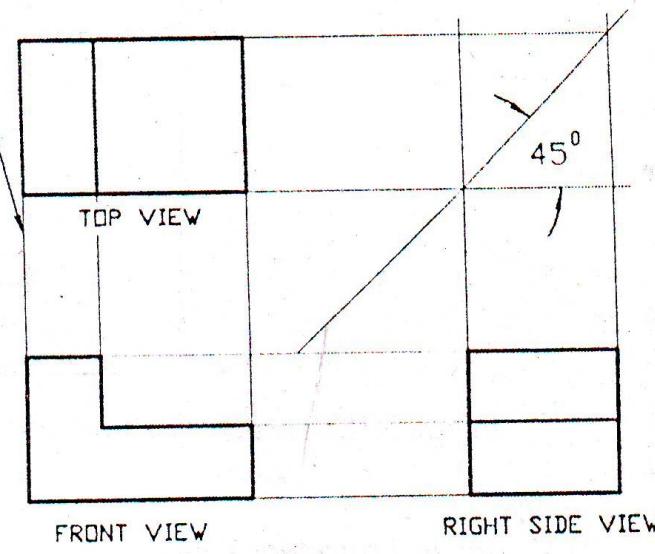
(a)



(b)

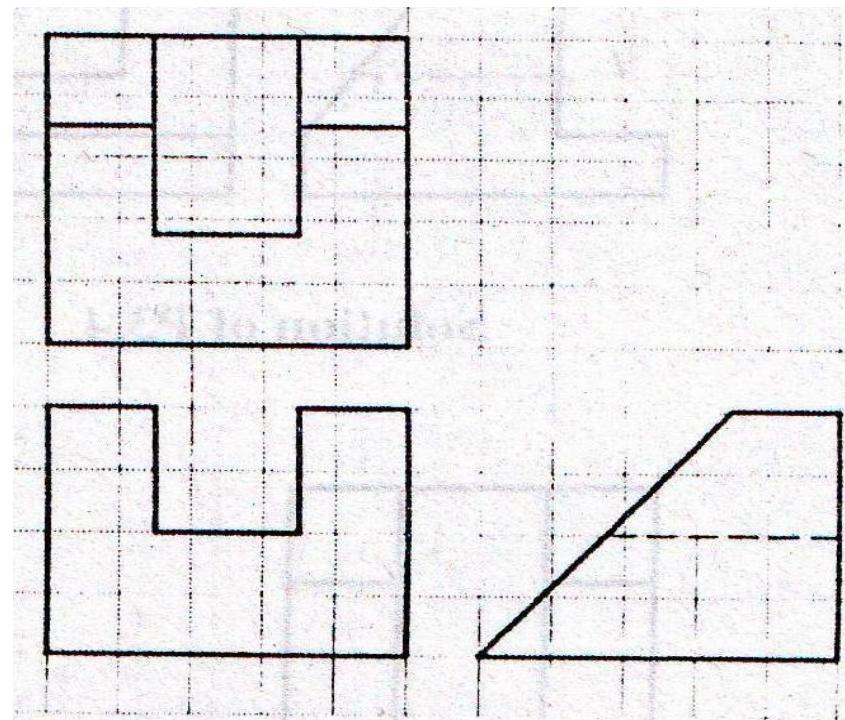
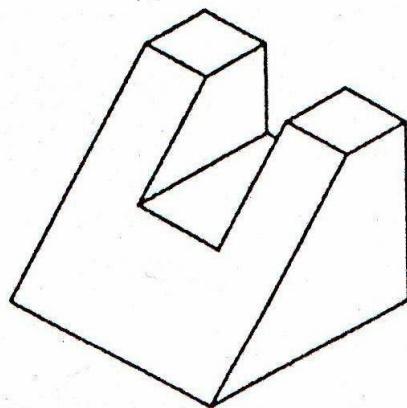


(c)



(d)

## Examples of Orthographic Projection View (Drawing)



**Solution of P3.11**

## Examples of Orthographic Projection View (Drawing)

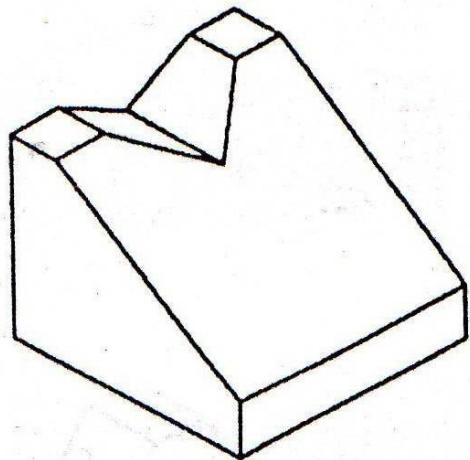
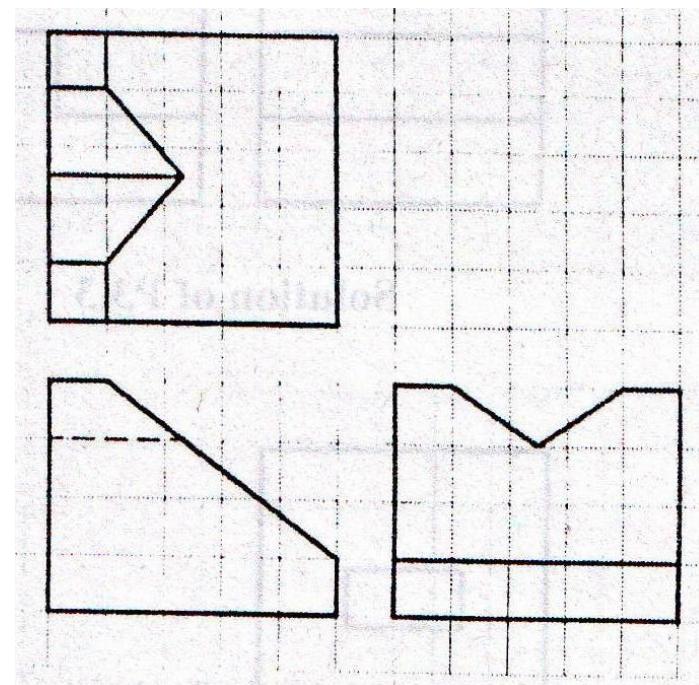


Fig. P3.12



Solution of P3.12

## Examples of Orthographic Projection View (Drawing)

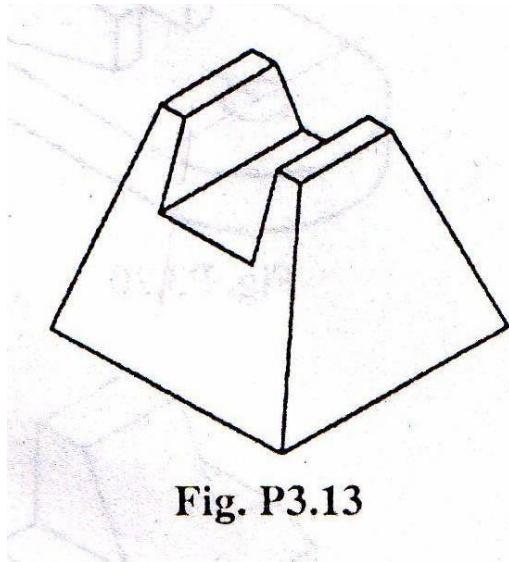
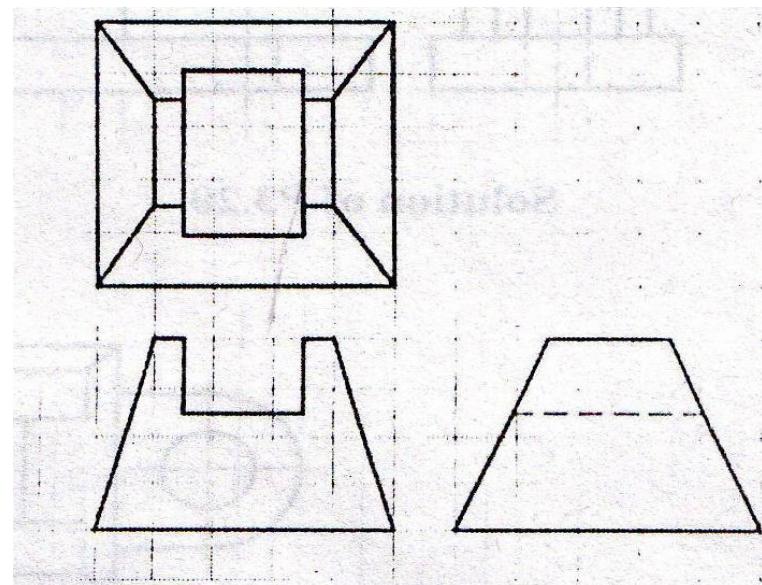


Fig. P3.13



**Solution of P3.13**

## Examples of Orthographic Projection View (Drawing)

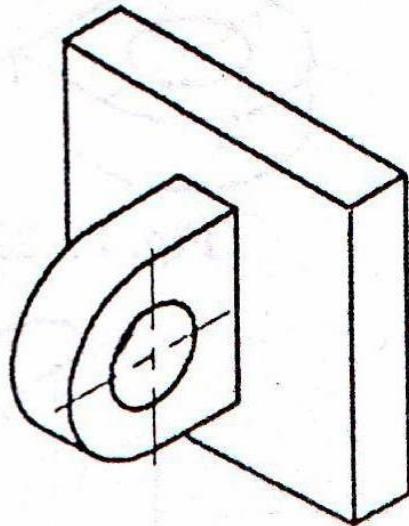
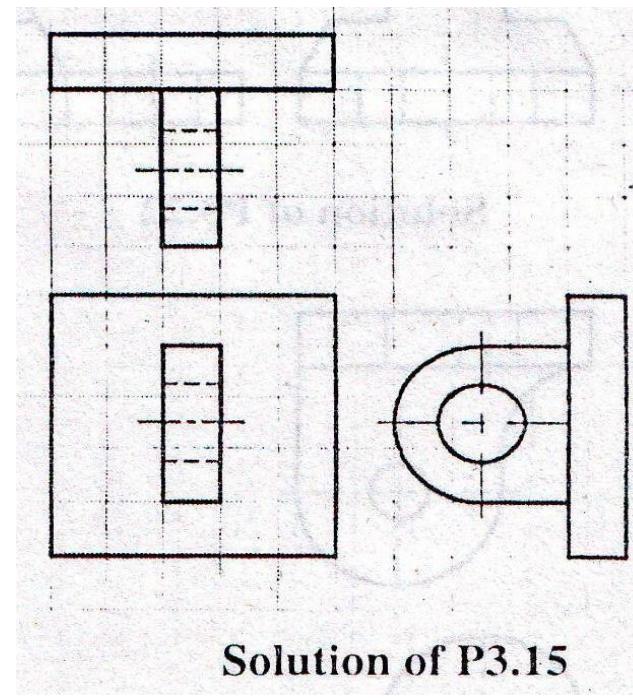


Fig. P3.15



Solution of P3.15

## Examples of Orthographic Projection View (Drawing)

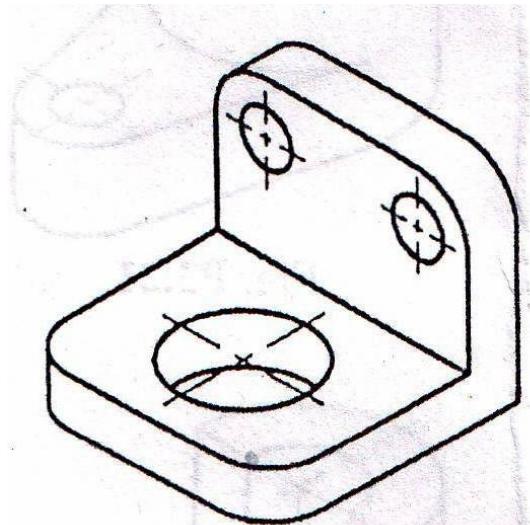
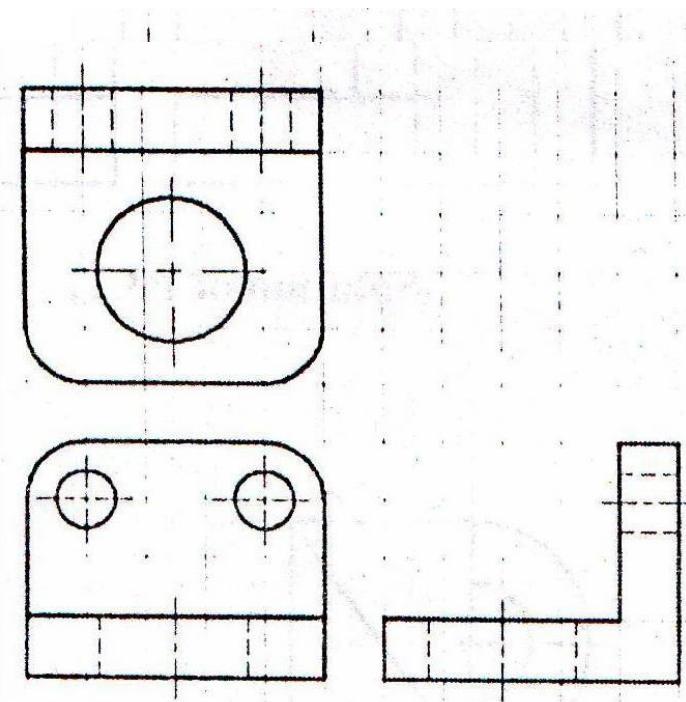


Fig. P3.16



Solution of P3.16

## Examples of Orthographic Projection View (Drawing)

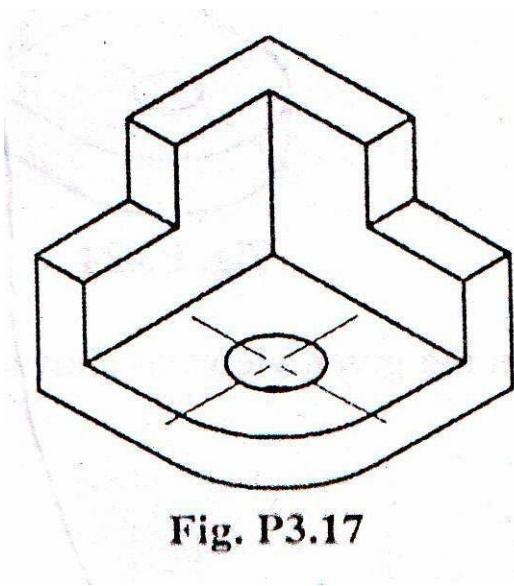
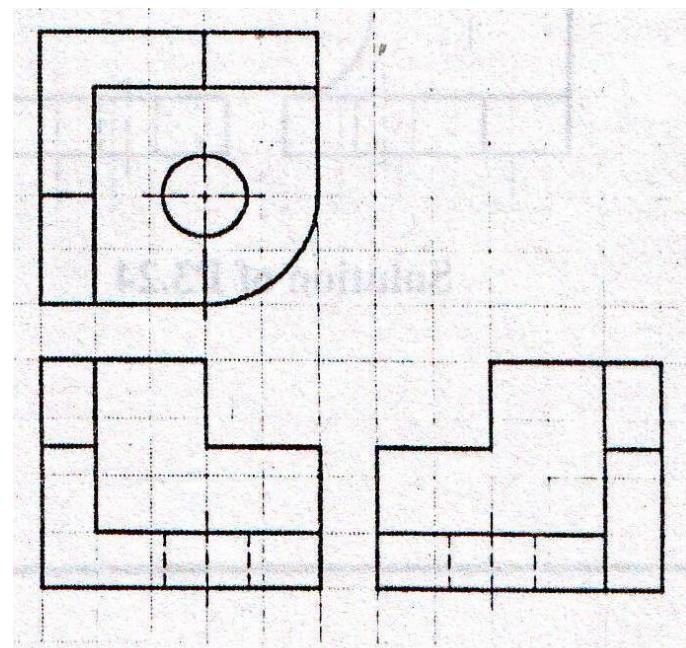
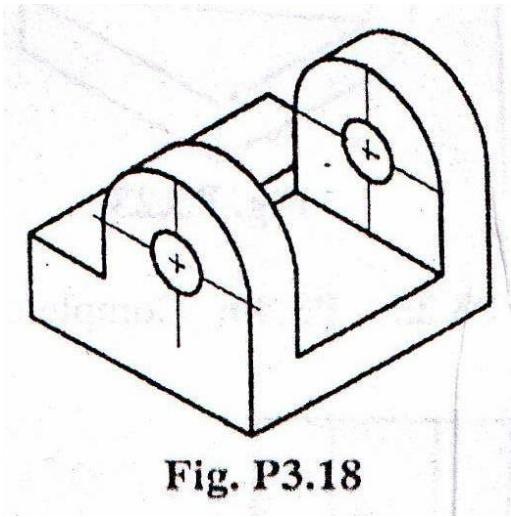


Fig. P3.17

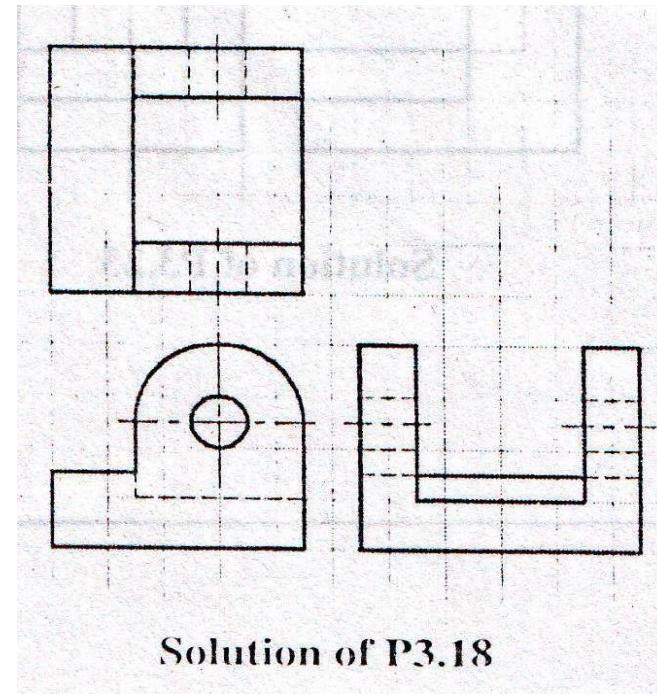


Solution of P3.17

## Examples of Orthographic Projection View (Drawing)



**Fig. P3.18**



**Solution of P3.18**

## Examples of Orthographic Projection View (Drawing)

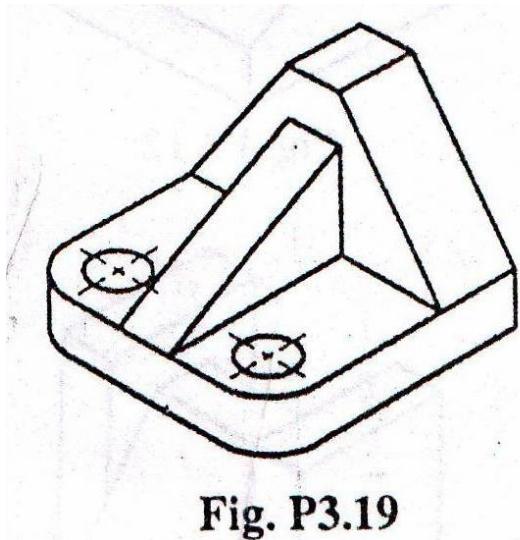
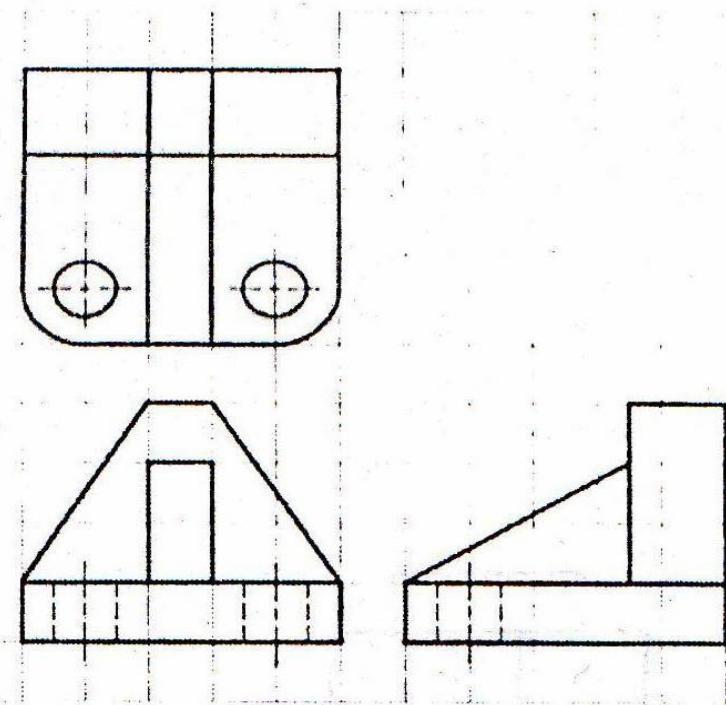


Fig. P3.19



Solution of P3.19

## Examples of Orthographic Projection View (Drawing)

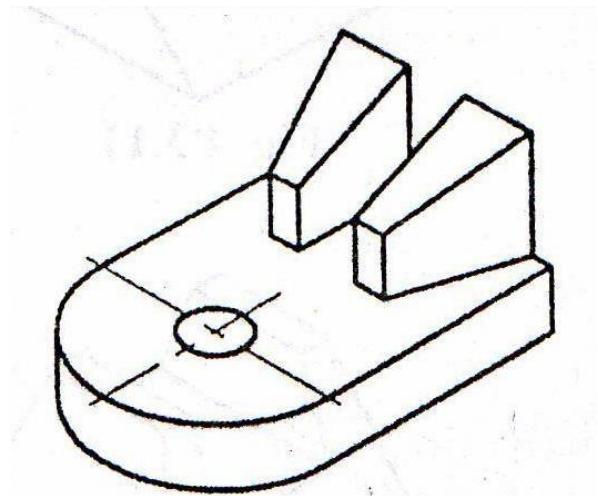
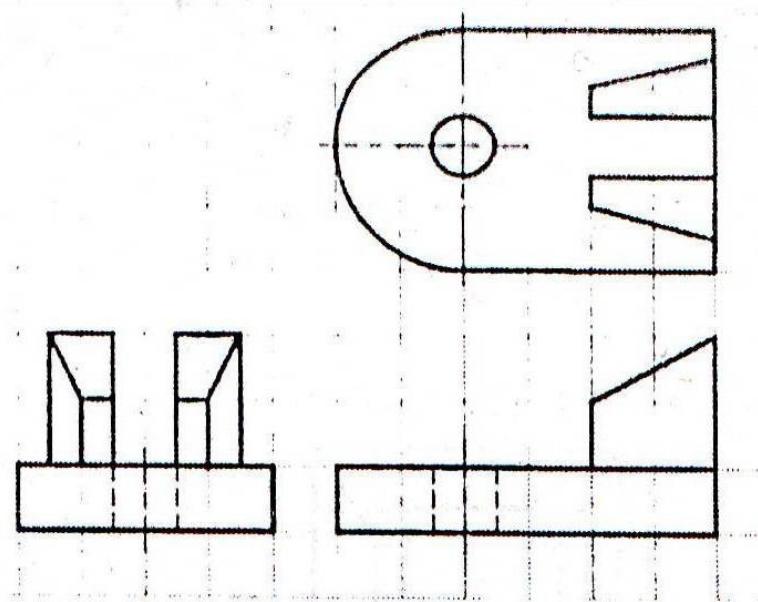
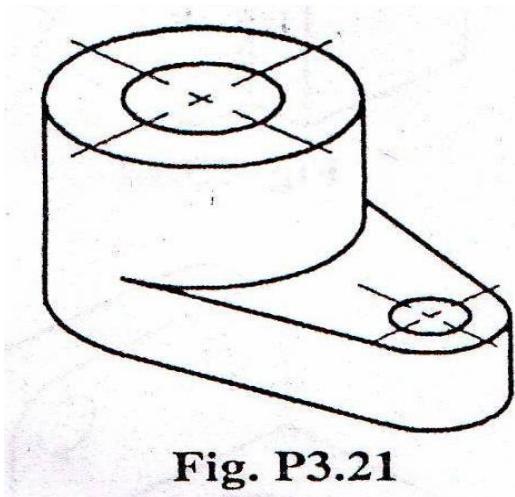


Fig. P3.20

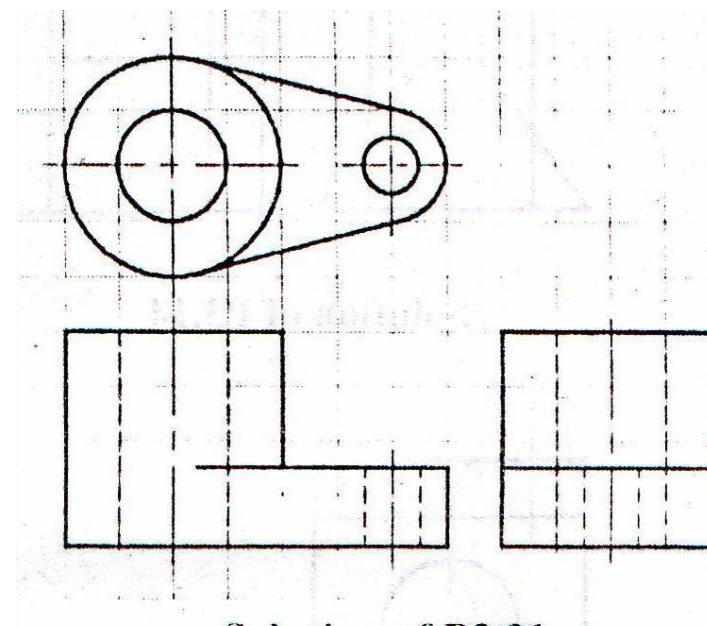


Solution of P3.20

## Examples of Orthographic Projection View (Drawing)



**Fig. P3.21**



**Solution of P3.21**

## Examples of Orthographic Projection View (Drawing)

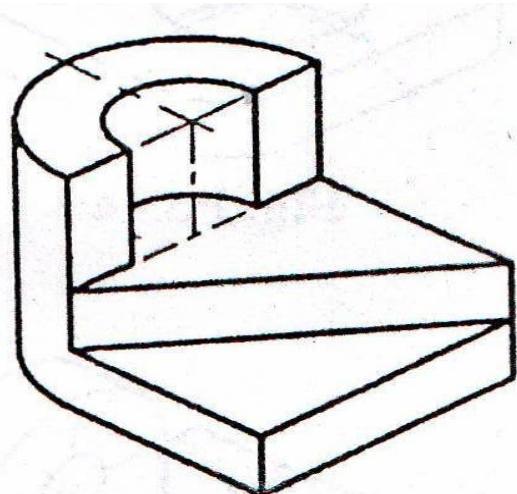
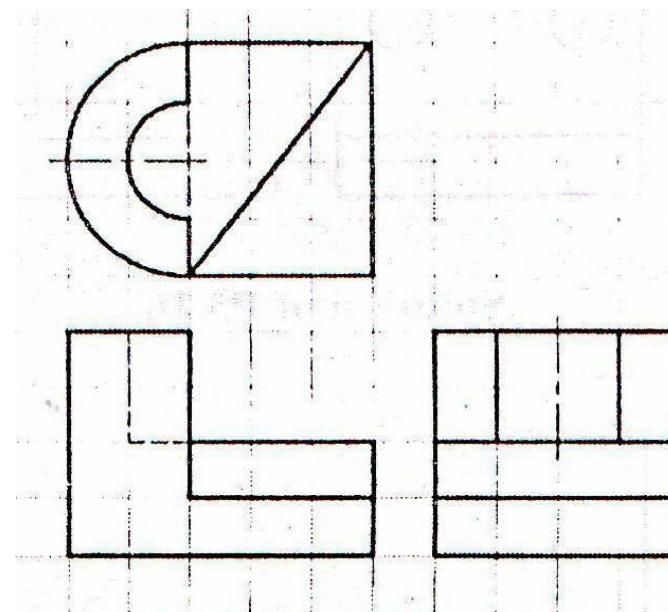


Fig. P3.23



Solution of P3.23

## Examples of Orthographic Projection View (Drawing)

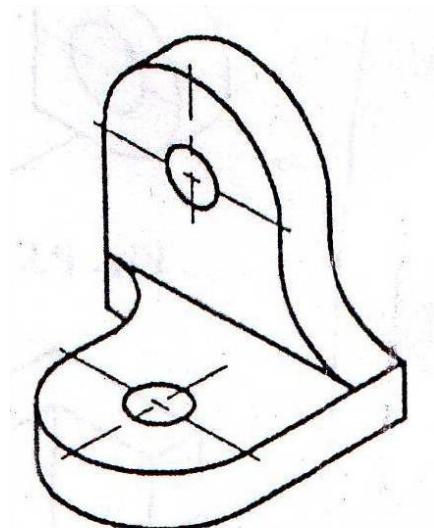
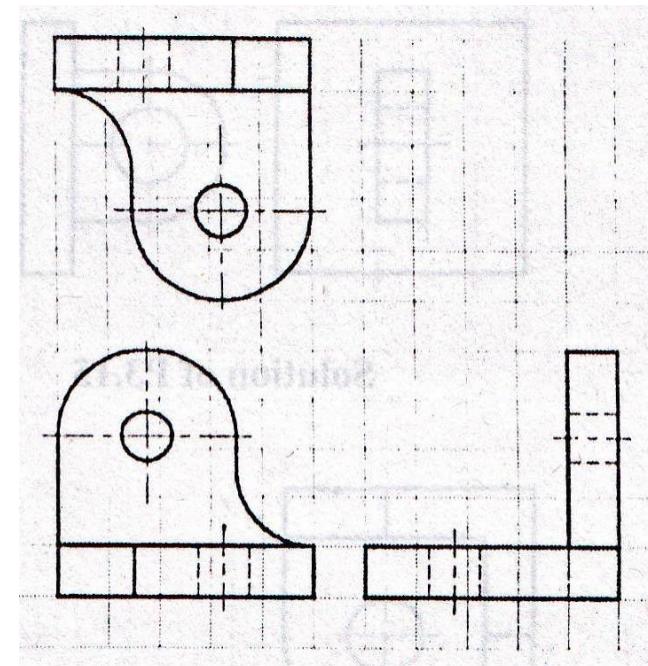


Fig. P3.24



Solution of P3.24

**Prob. P3.58:** Draw top, front and right side views of the holder as shown in Fig. P3.58.

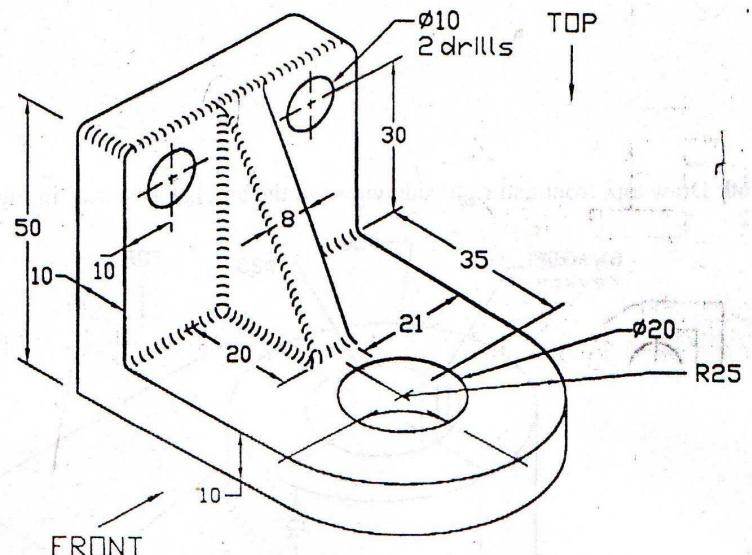
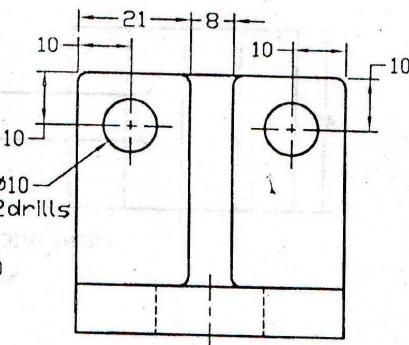
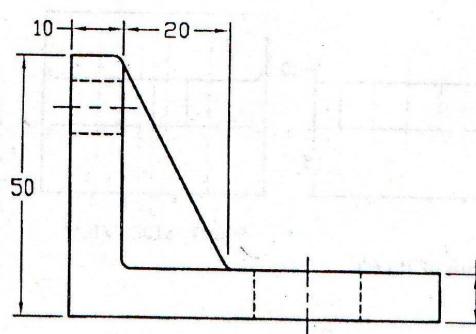
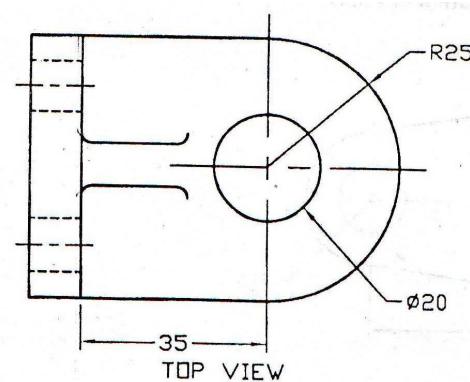


Fig. P3.58



**Prob. P3.59:** Draw the top, front and right side views of the support as shown in Fig. P3.59.

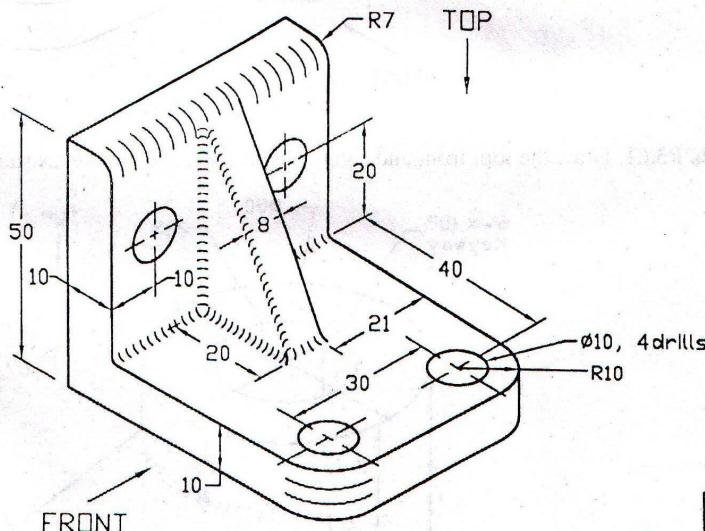
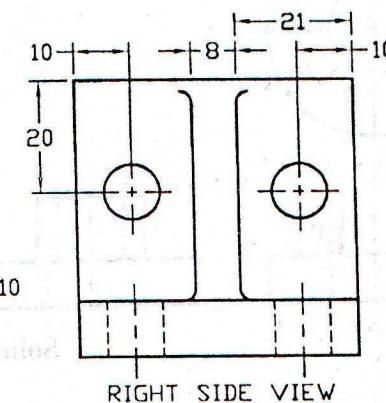
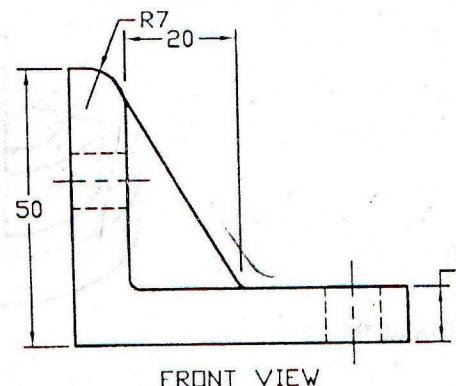
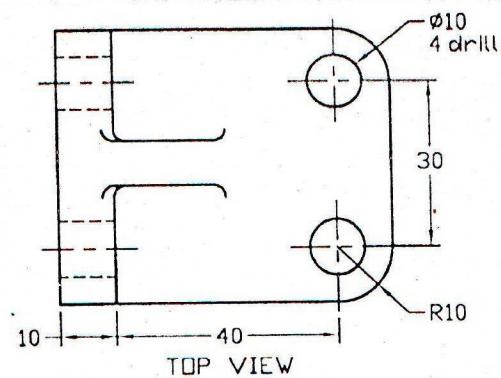


Fig. P3.59



### Solution of P3.59

**Prob. P3.60:** Draw top, front and right side views of the bracket as shown in Fig. P3.60.

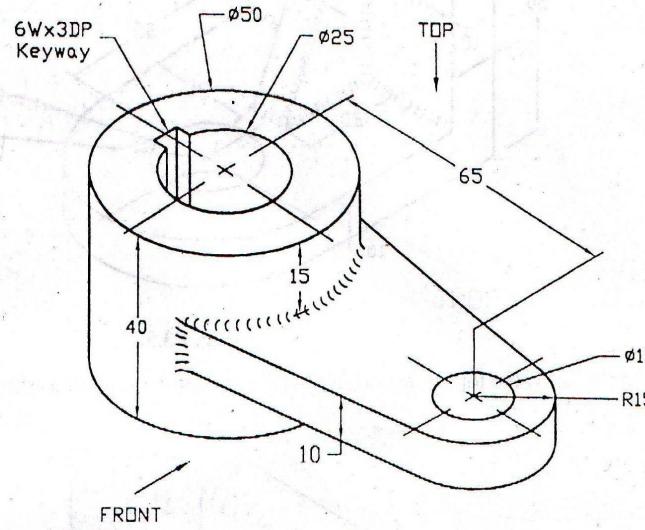
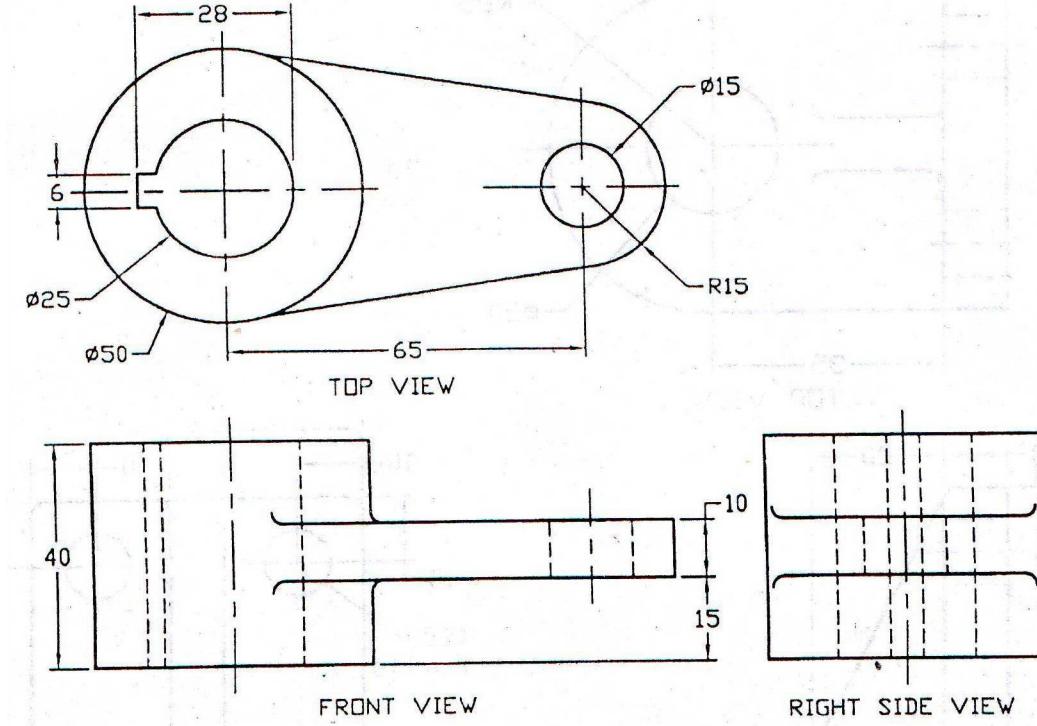


Fig. P3.60



**Solution of P3.60**

Prob. P3.61: Draw the top, front and right side views of the bracket as shown in Fig. P3.61.

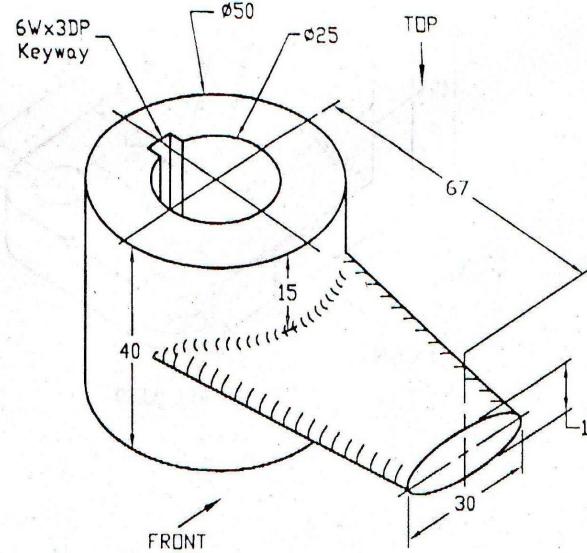
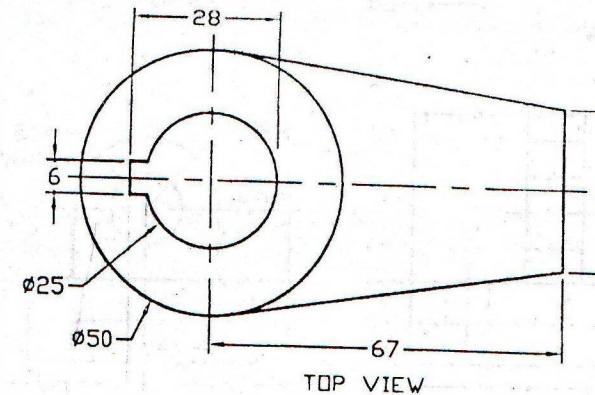
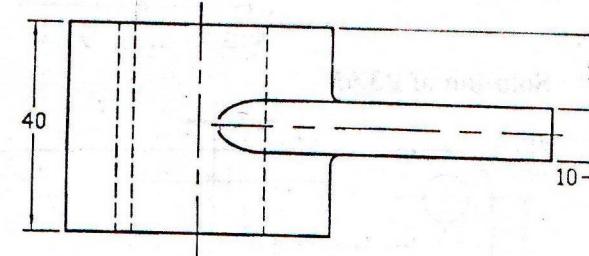


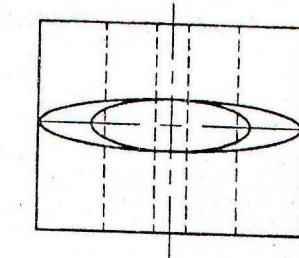
Fig. P3.61



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

Solution of P3.61

Prob. P3.62: Draw the top, front and right side views of the fixer as shown in Fig. P3.62.

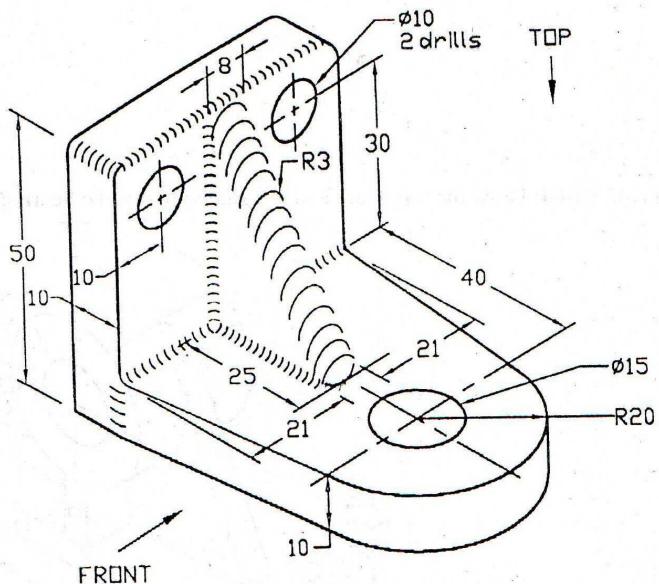
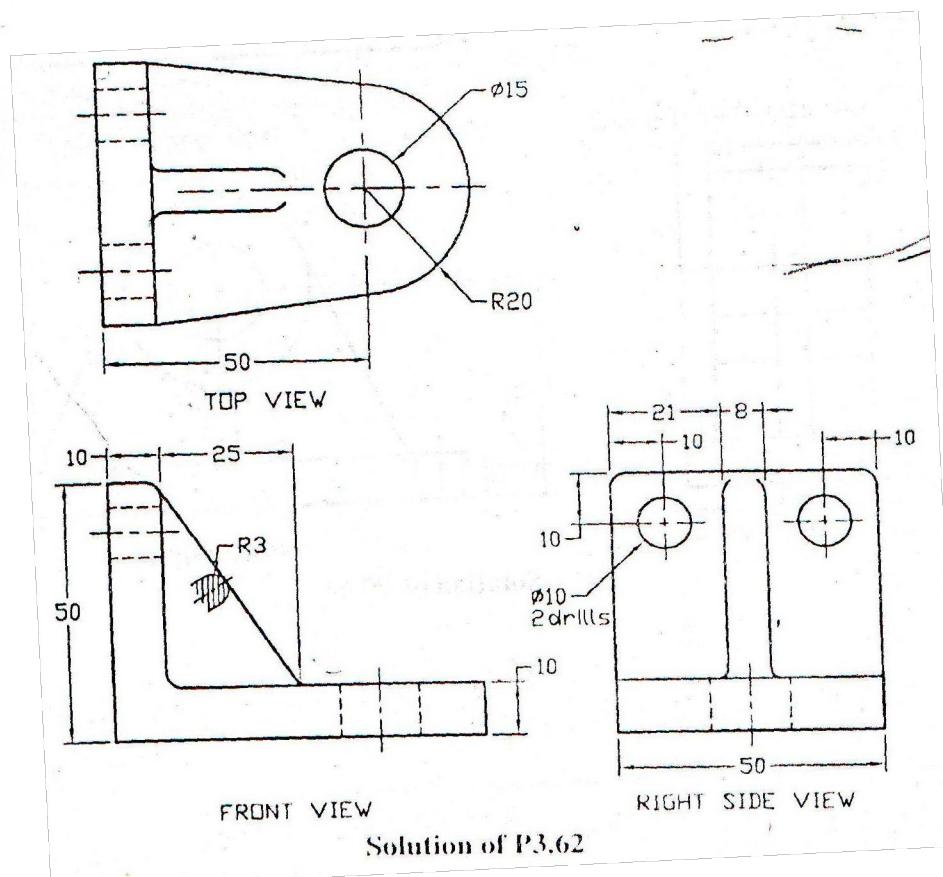


Fig. P3.62



Solution of P3.62

**Prob. P3.63:** Draw the top, front and right side views of the guide block as shown in Fig. P3.63.

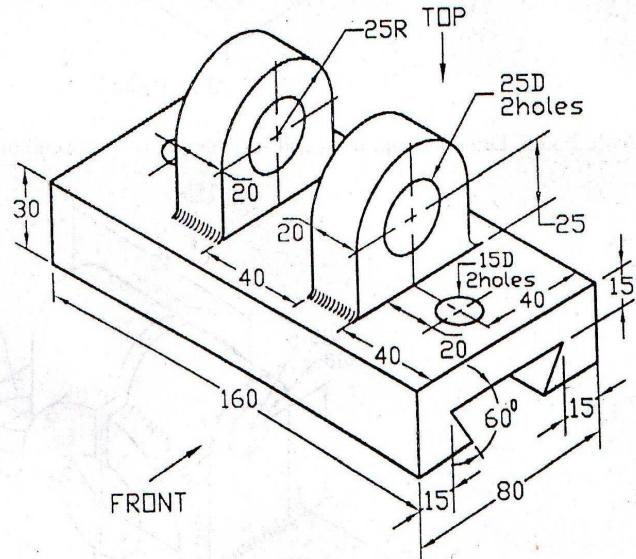
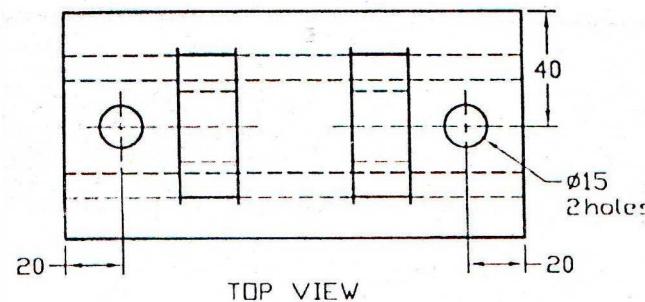
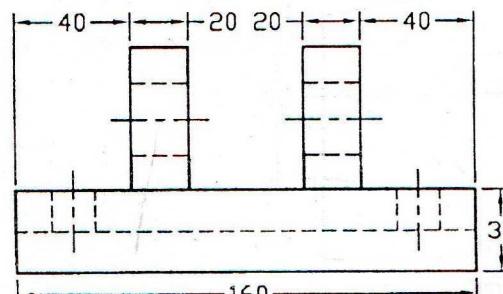


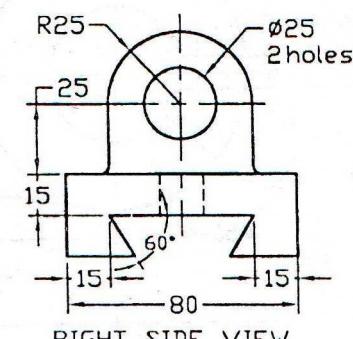
Fig. P3.63



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

Solution of P3.63

**Prob. P3.64:** Draw the top, front and left side views of the bearing as shown in Fig. P3.64.

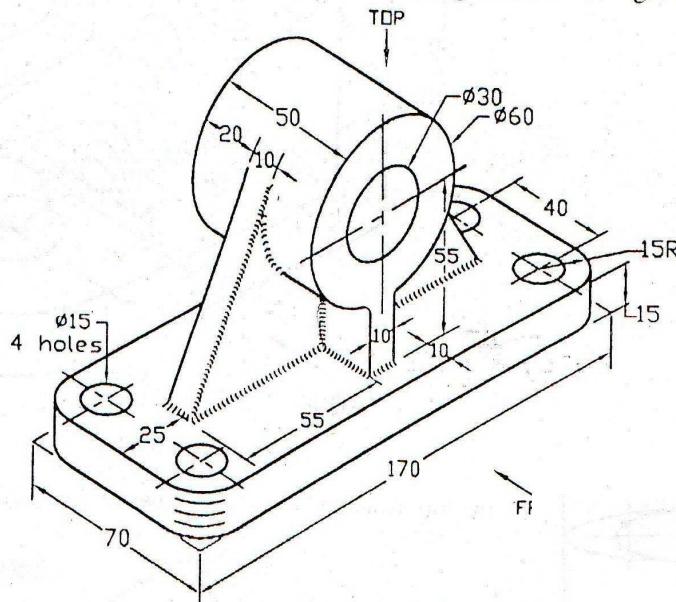
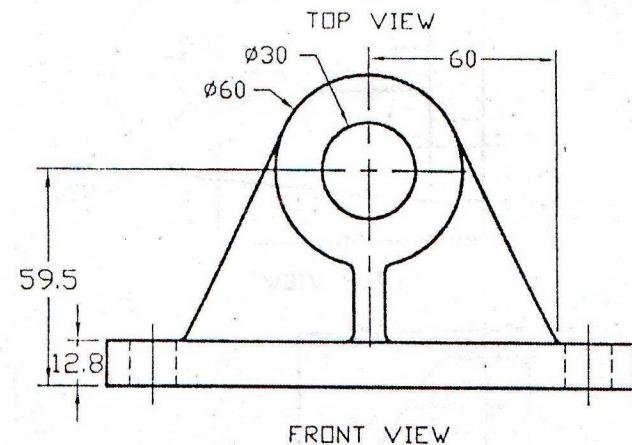
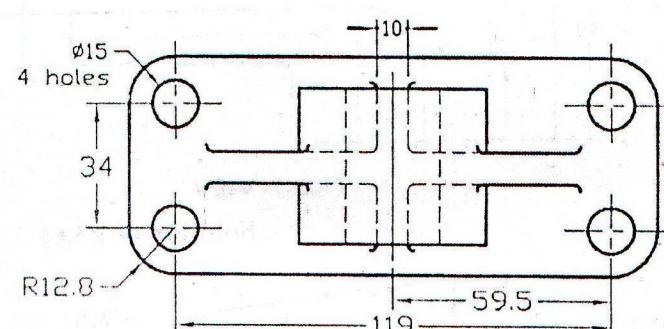
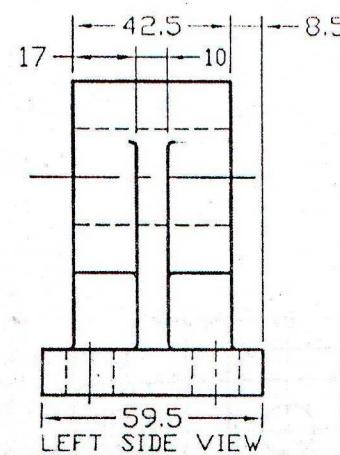


Fig. P3.64



Solution of P3.64

Prob. P3.66: Draw the top, front and left side views of the bearing bracket as shown in Fig. P3.66.

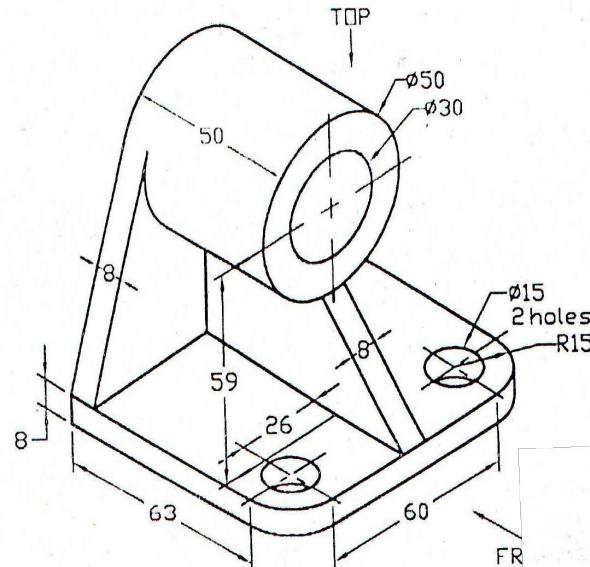
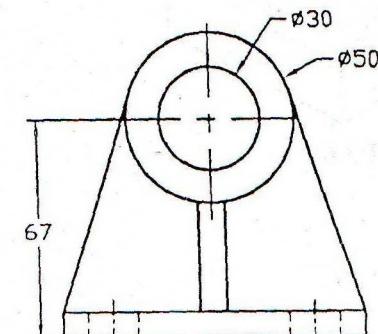
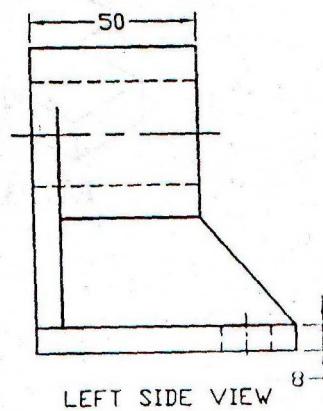
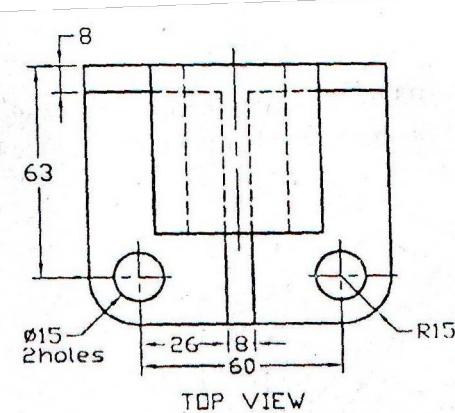


Fig. P3.66



Solution of P3.66

Prob. P3.67: Draw the top, front and right side views of the bearing bracket as shown in Fig. P3.67.

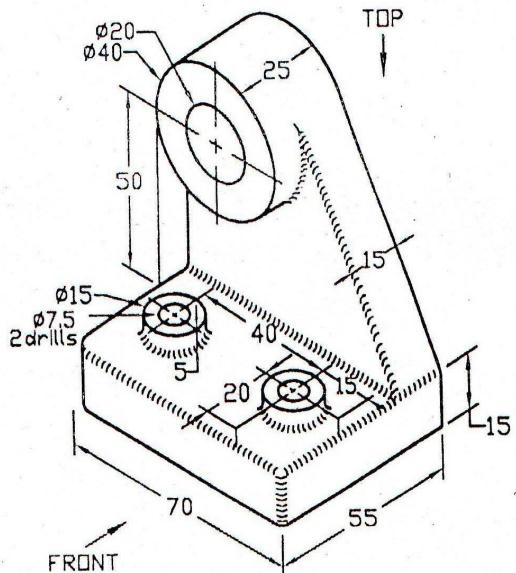
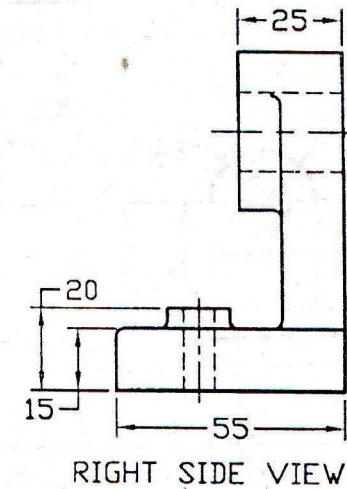
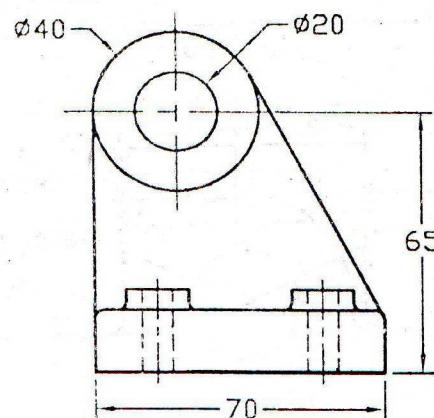
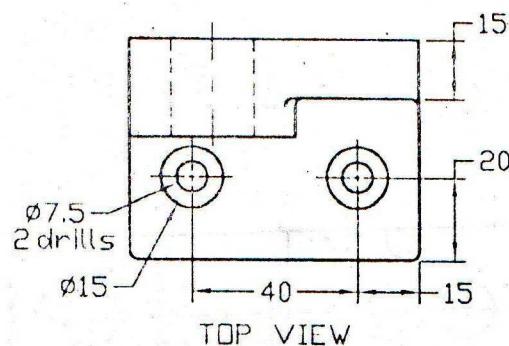


Fig. P3.67



Solution of P3.67

# Exercise

Prob. P3.124: Draw the top, front and left side views of the V-slide as shown in Fig. P3.124.

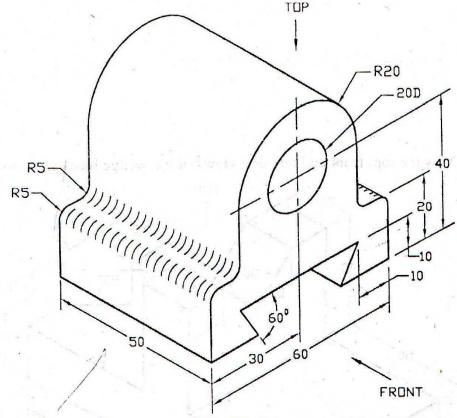


Fig. P3.124

Prob. P3.125: Draw the top, front and right side views of the hanger support as shown in Fig. P3.125.

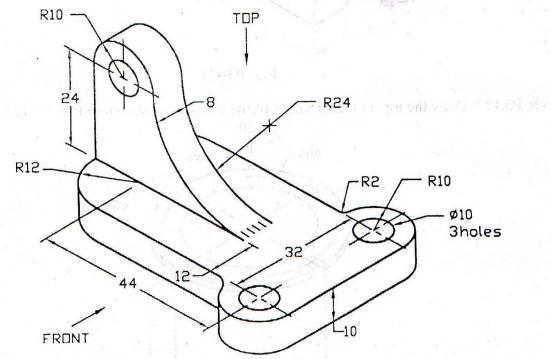


Fig. P3.125

Prob. P3.126: Draw the top, front and left side views of the wedge block as shown in Fig. P3.126.

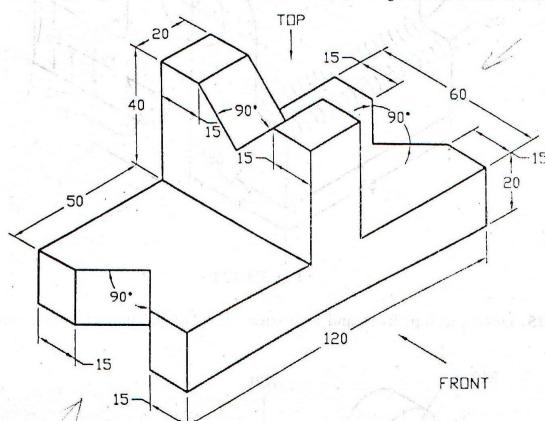


Fig. P3.126

Prob. P3.130: Draw the top, front and right side views of the bracket as shown in Fig. P3.130  
(Fillet radii are 3R).

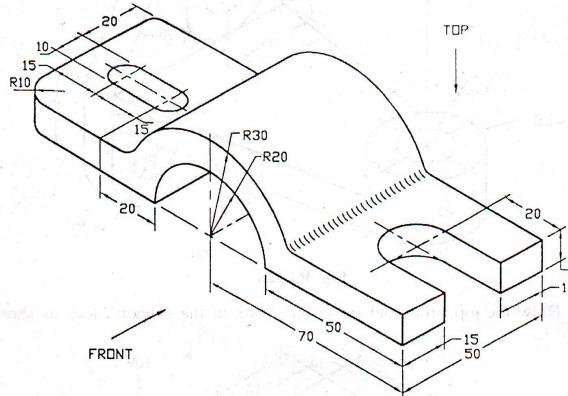


Fig. P3.130

**Sectional  
Views  
And  
Conventions**

## X-Sectional View

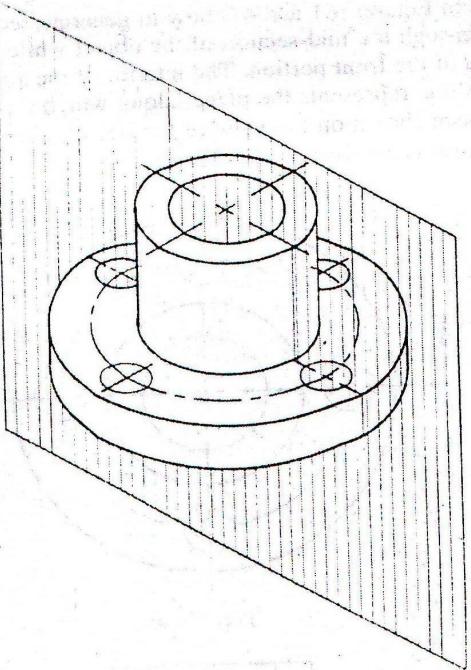


Figure 4.1: Object with Cutting Plane Through Mid-Sector

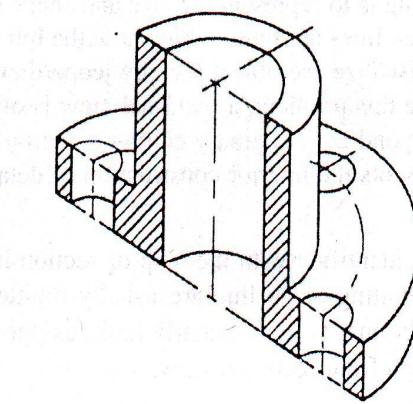


Figure 4.2: Section After Cutting and Removal of Front Portion

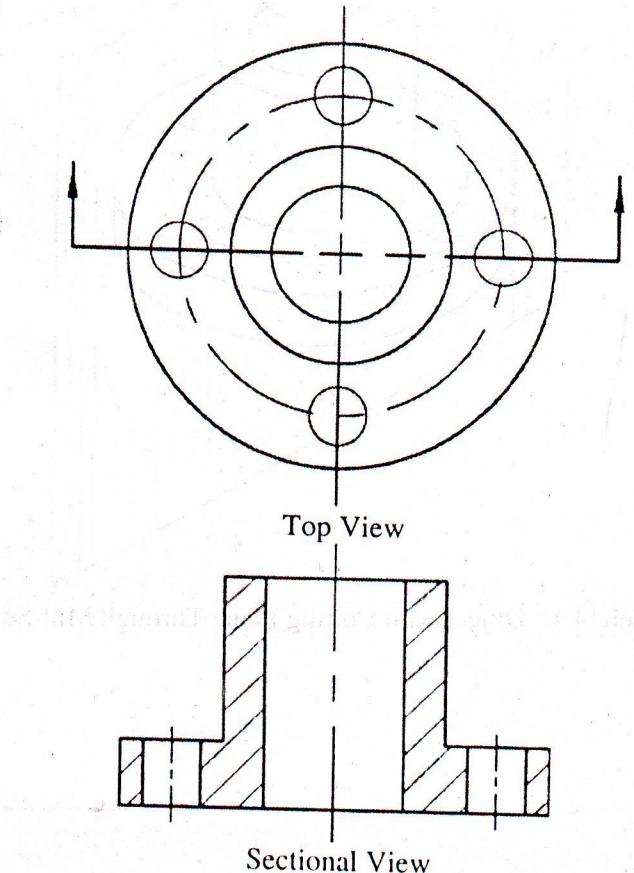


Figure 4.3: Views Showing Cutting Plane and Section

## X-Sectional View

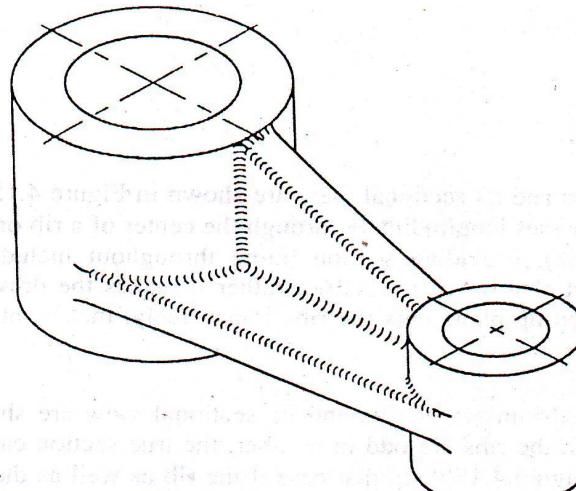
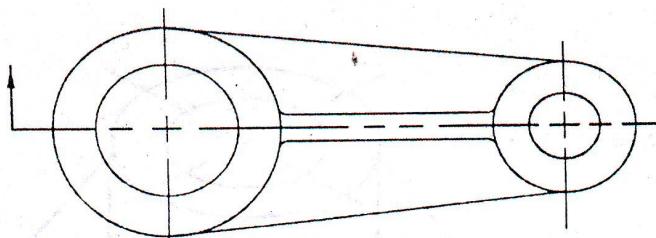
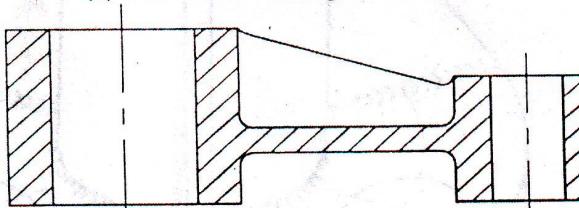


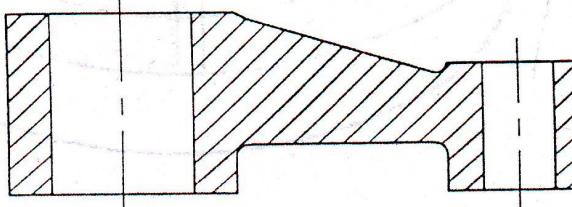
Figure 4.15: Object with Rib



(a) View with Cutting Plane Line



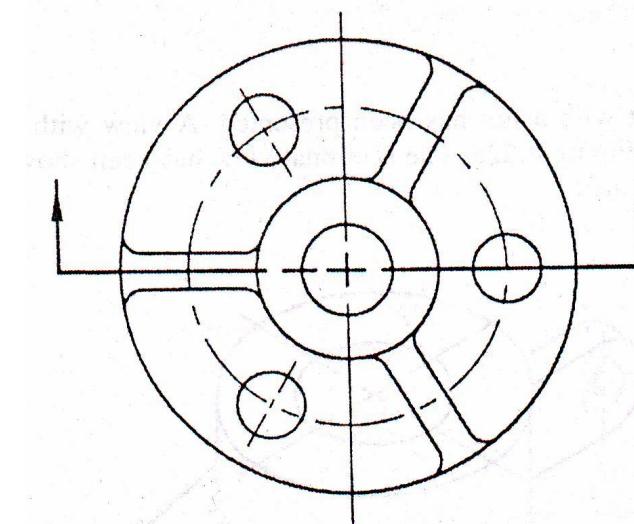
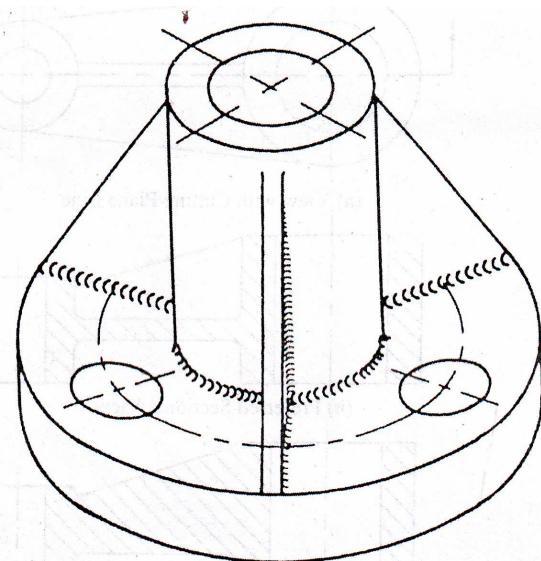
(b) Preferred Sectional View



(c) True Sectional View

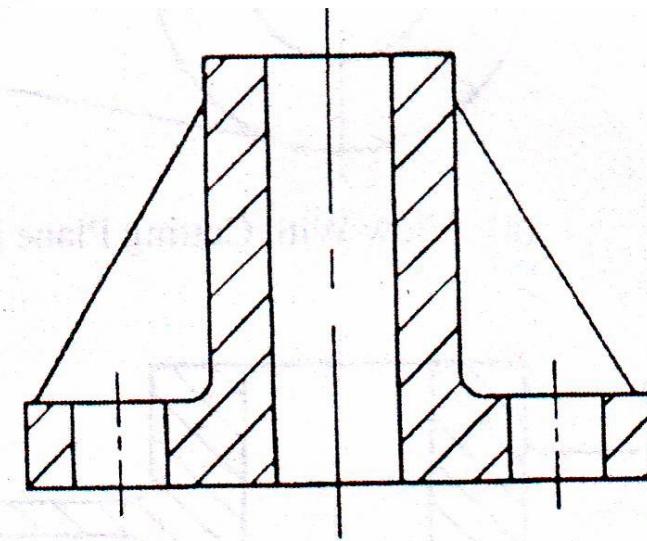
Figure 4.16: Sectional View with Ribs

## X-Sectional View



(a) View with Cutting Plane Line

Figure 4.17: Object with Odd Number of Ribs



(c) Preferred Sectional View

## X-Sectional View

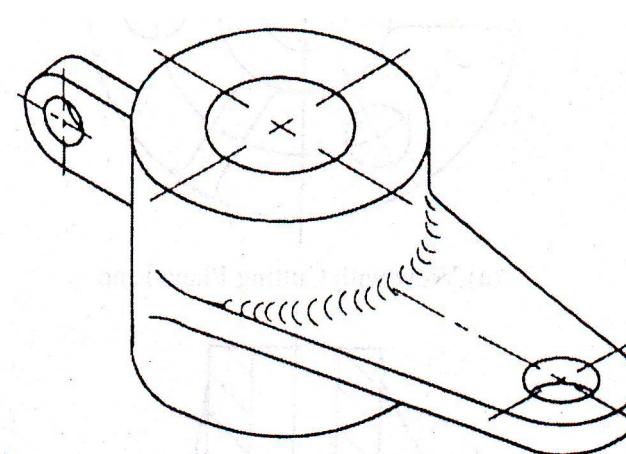
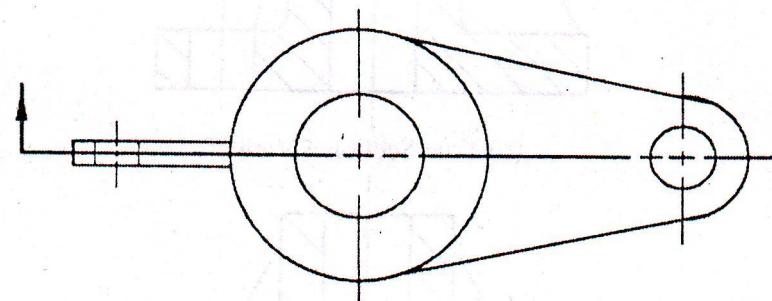
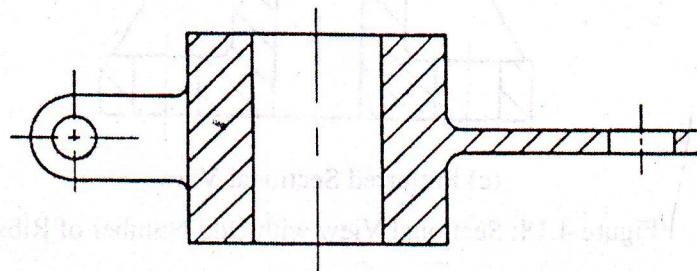


Figure 4.21: An Object With a Lug



(a) View With Cutting Plane Line



(b) Preferred Sectional View

# X-Sectional View

**Prob. 4.1:** Draw the top view and a suitable sectional view of the bearing shown in Fig. P4.1  
(Filletts and Rounds are 3R).

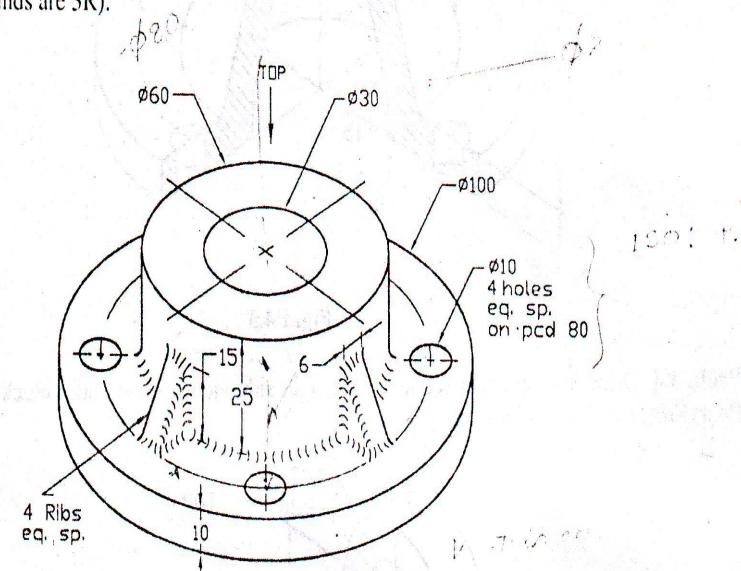
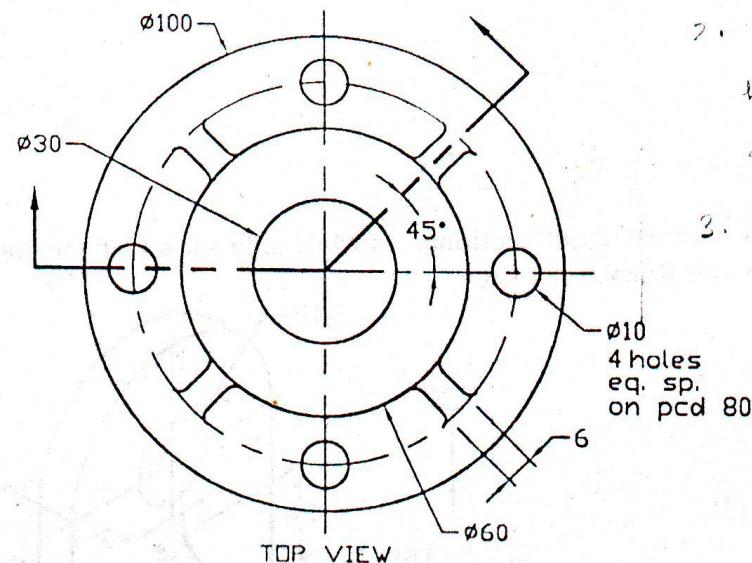
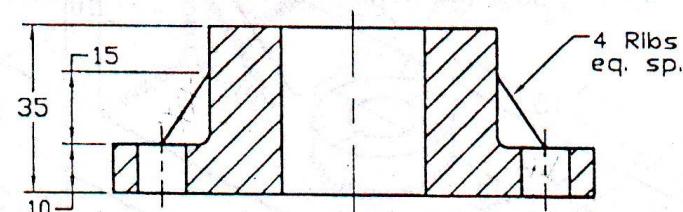


Fig. P4.1



TOP VIEW



SECTIONAL VIEW

**Solution of P4.1**

# X-Sectional View

**Prob. 4.2:** Draw the top and front sectional views of the base plate as shown in Fig. P4.2 (Filletts and Rounds are 3R).

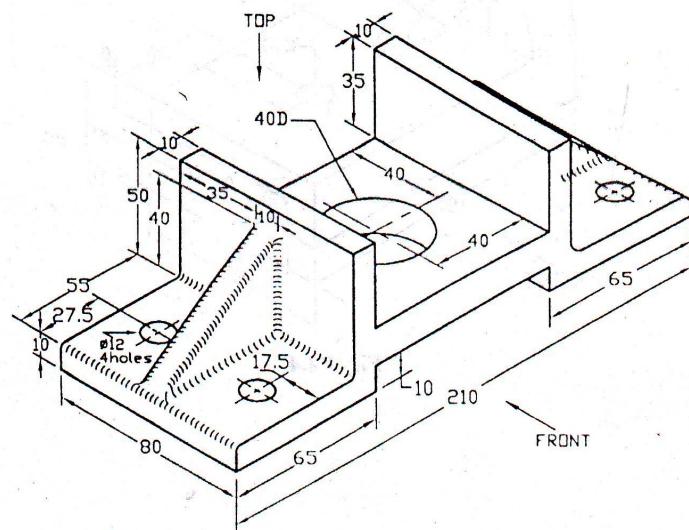
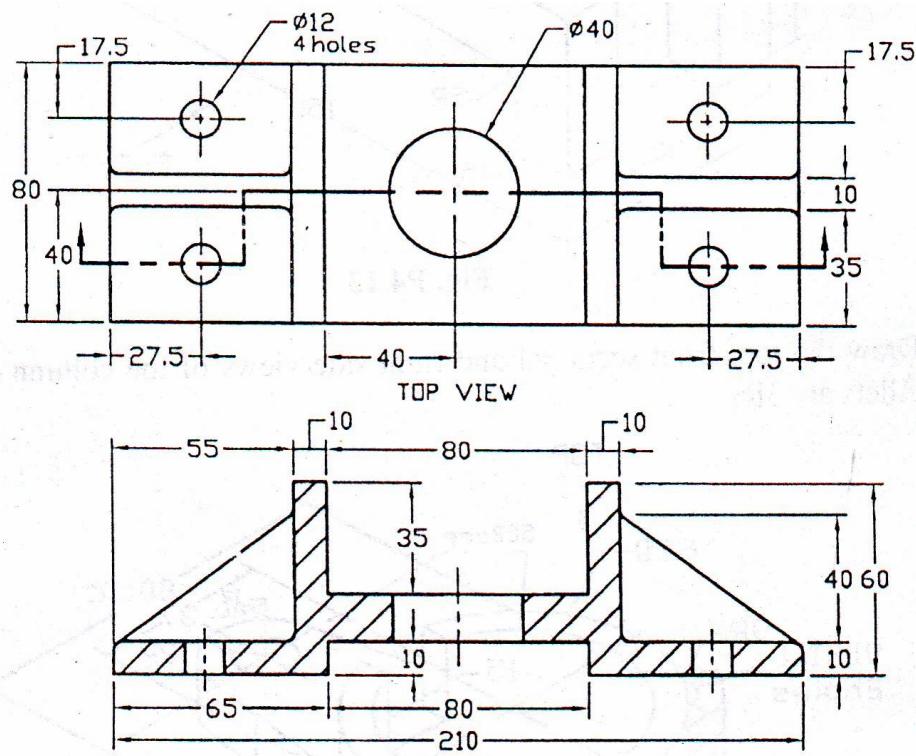


Fig. P4.2



**Solution of P4.2**

# X-Sectional View

**Prob. 4.3:** Draw the top view and a suitable sectional view of the bearing retainer shown in Fig. P4.3.

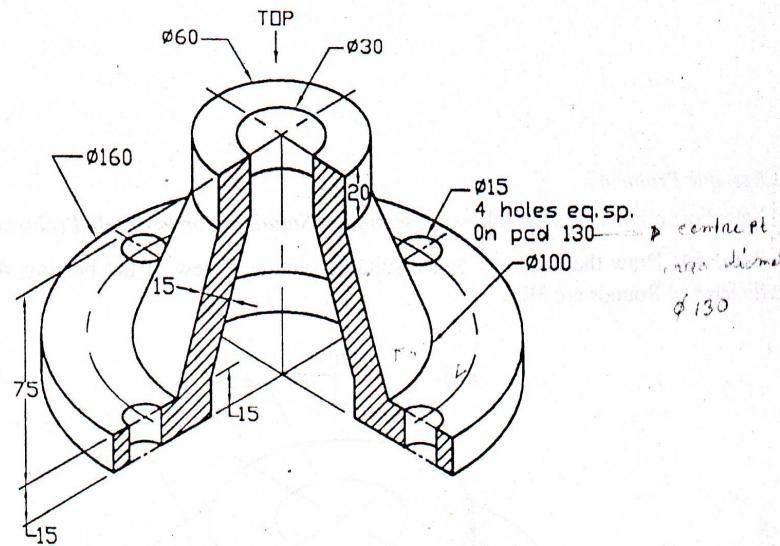
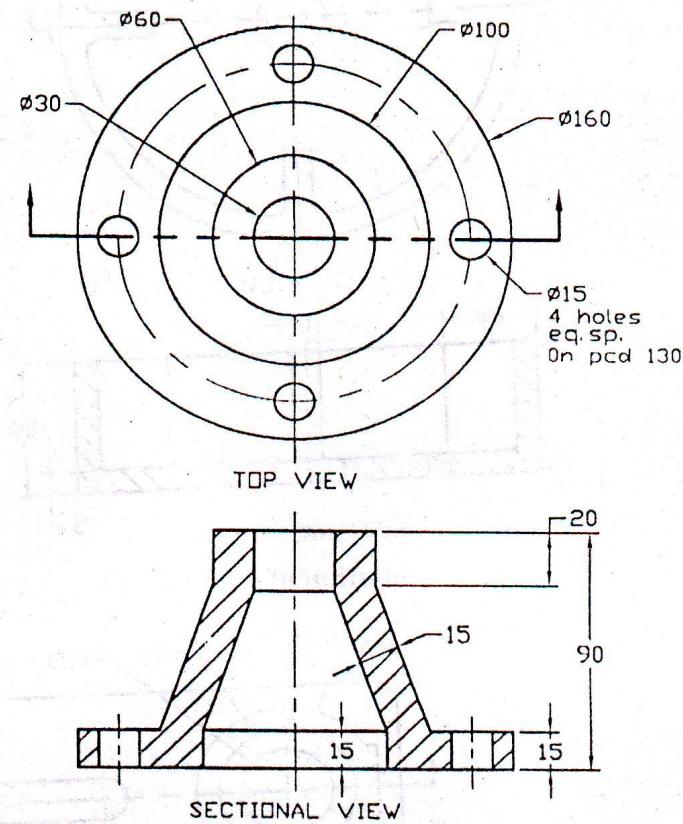


Fig. P4.3



Solution of P4.3

# X-Sectional View

**Prob. 4.4:** Draw the top, front sectional and right side views of the slider block as shown in Fig. P4.4 (Filletts and Rounds are 3R).

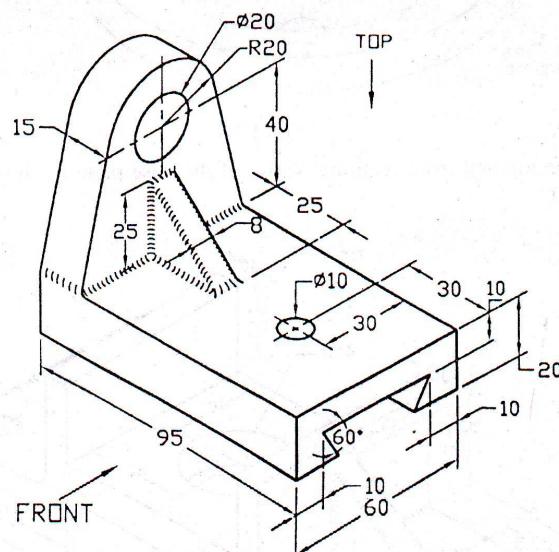
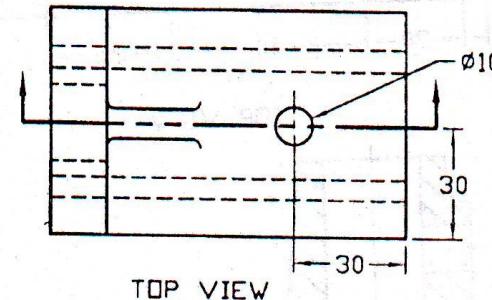
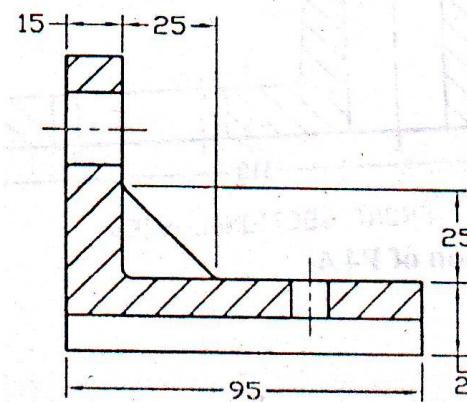


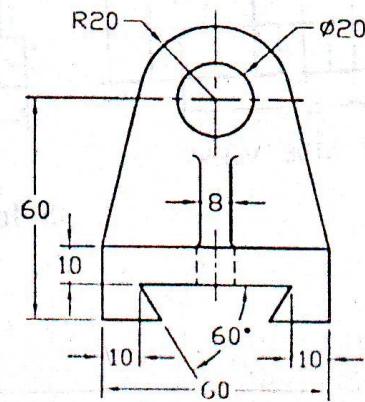
Fig. P4.4



TOP VIEW



FRONT SECTIONAL VIEW



RIGHT SIDE VIEW

**Solution of P4.4**

# X-Sectional View

Prob. 4.5: Draw the top view and a suitable sectional view of the rotor shown in Fig. P4.5 (Filletts are 3R).

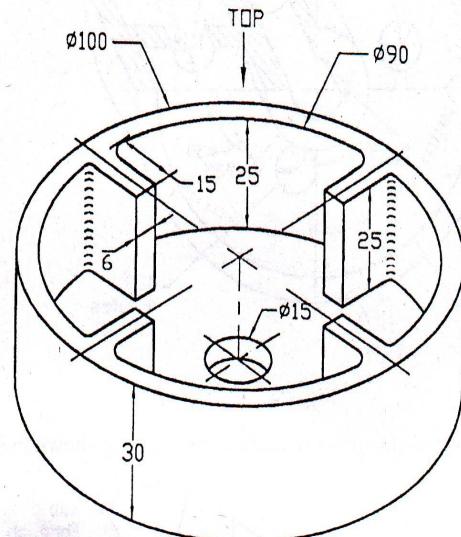
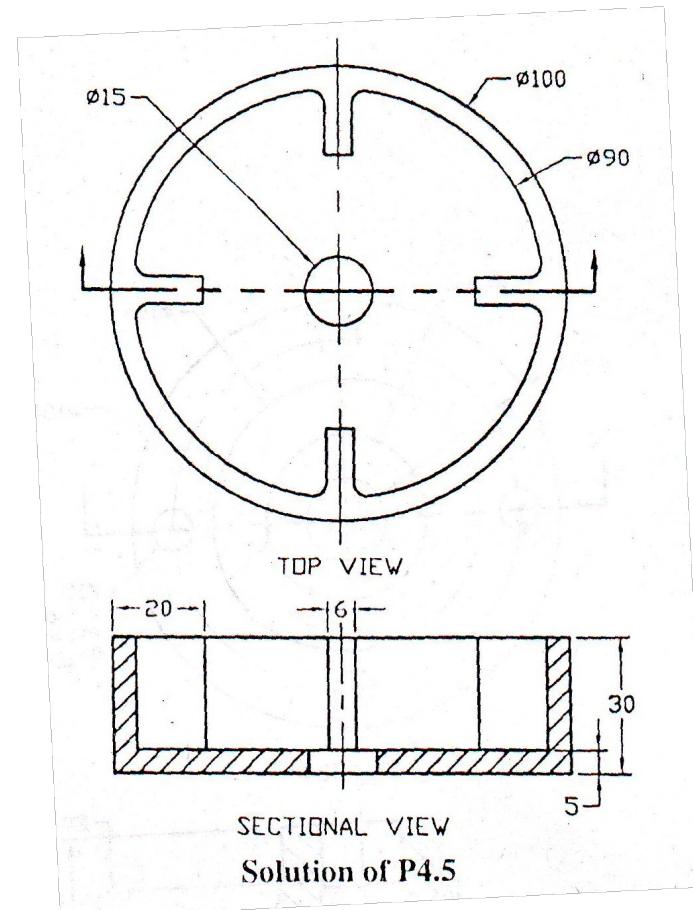


Fig. P4.5



Solution of P4.5

# Auxiliary View

## Auxiliary View

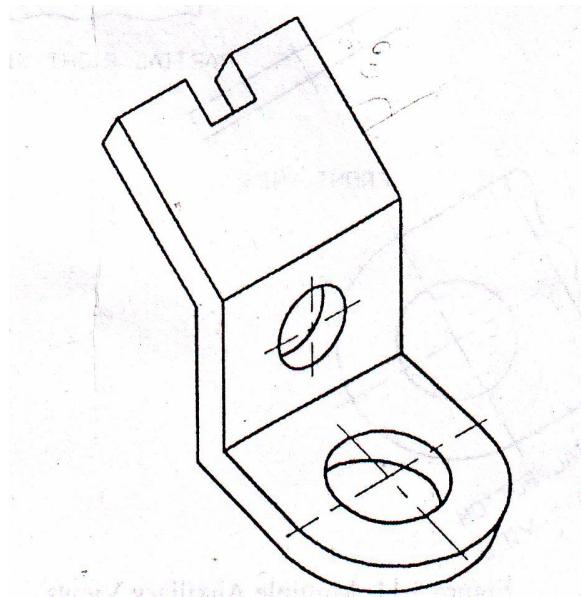


Figure 5.10: Object with two inclined surfaces

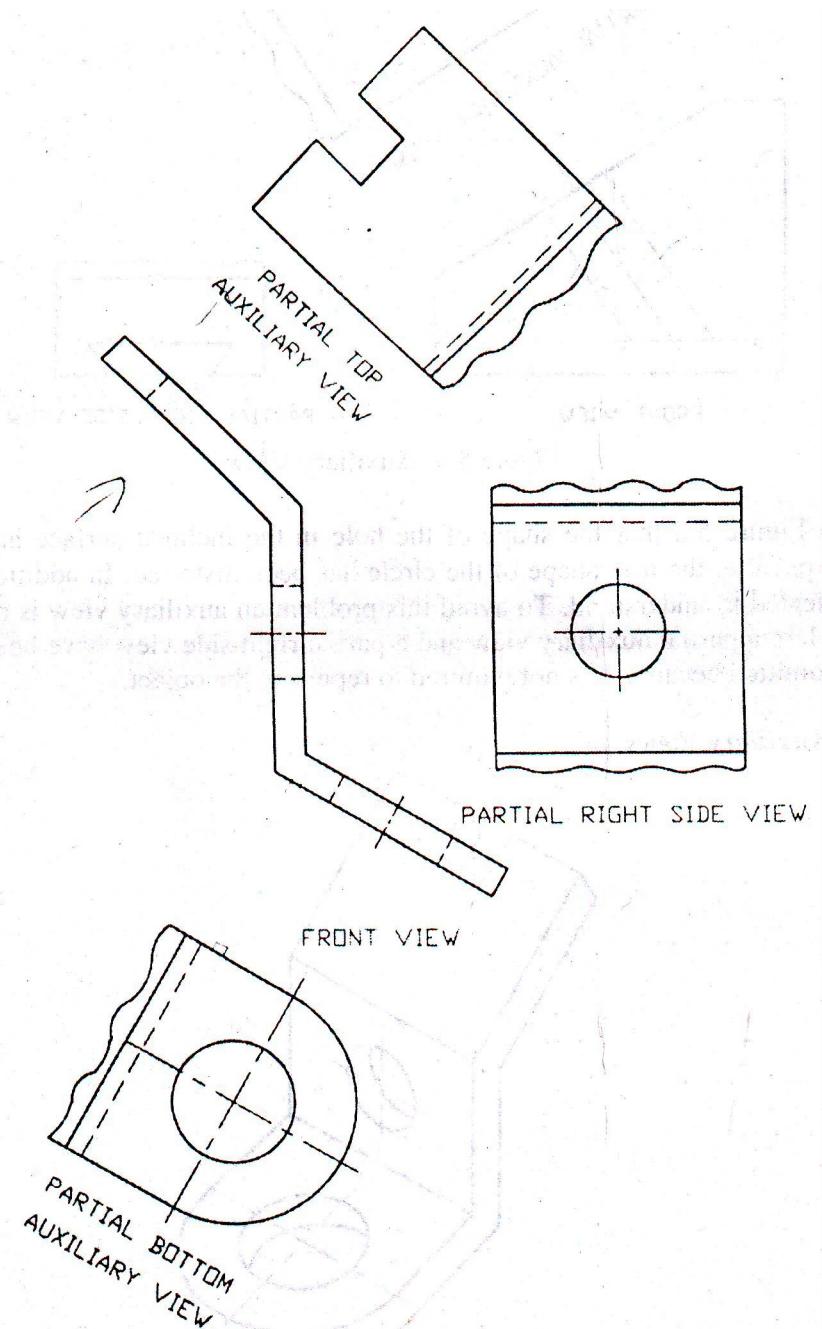


Figure 5.11: Multiple Auxiliary Views

# Auxiliary View

Prob. 5.1: Draw front, partial bottom, left and right auxiliary views of the connector plate as shown in Fig. P5.1.

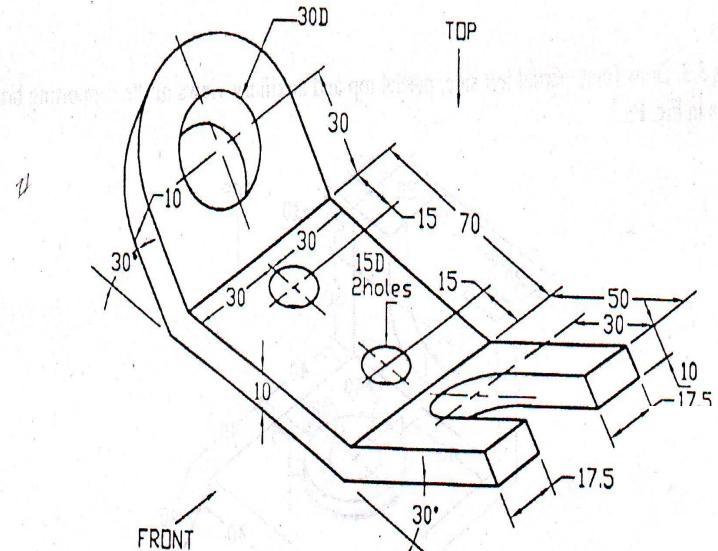
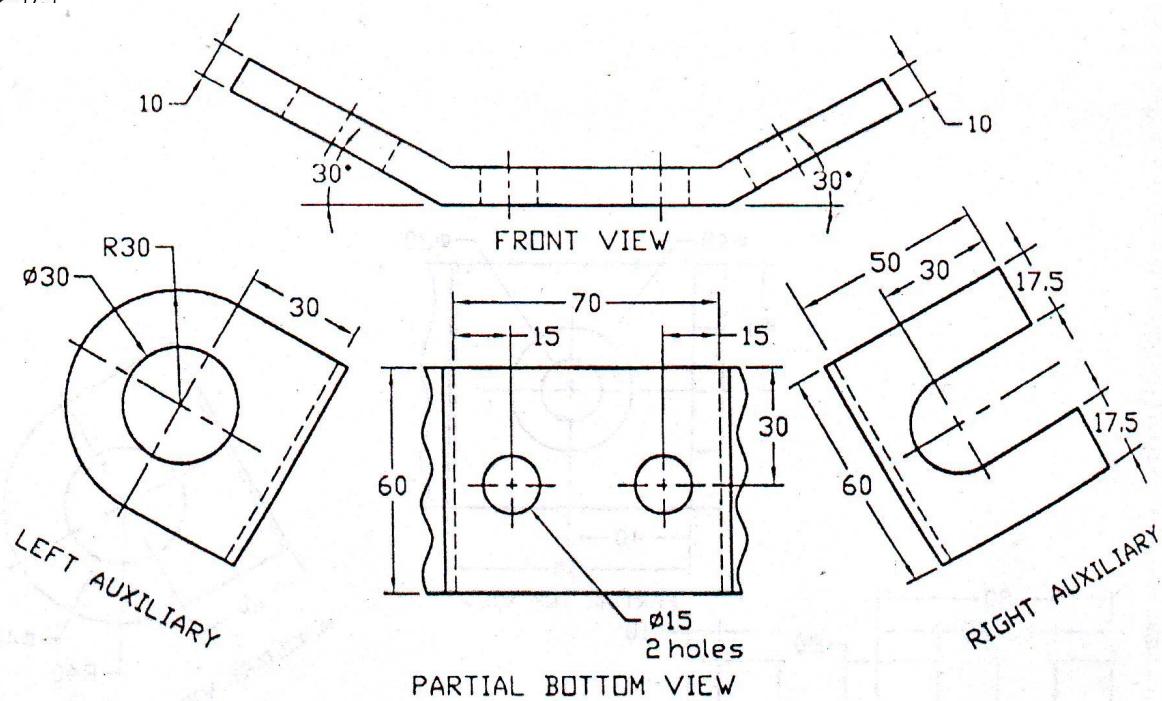


Fig. P5.1



Solution of P5.1

## Auxiliary View

**Prob. 5.2:** Draw front, partial left, partial top and auxiliary views of the supporting plate as shown in Fig. P5.2.

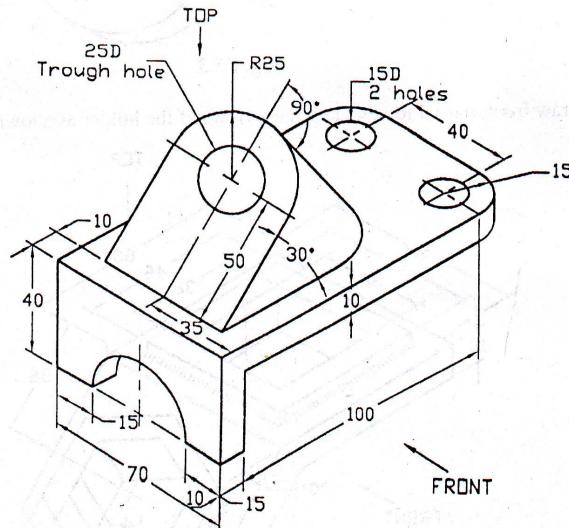
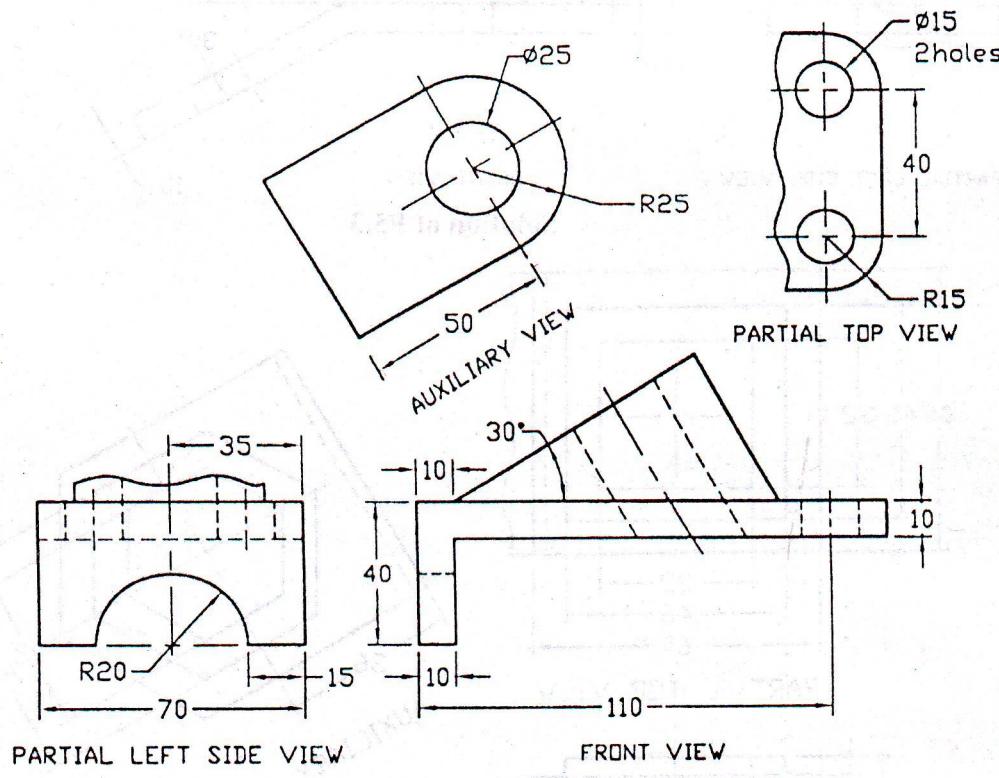


Fig. P5.2



## Solution of P5.2

# Auxiliary View

Prob. 5.3: Draw front, partial left side, partial top and auxiliary views of the supporting bracket as shown in Fig. P5.3.

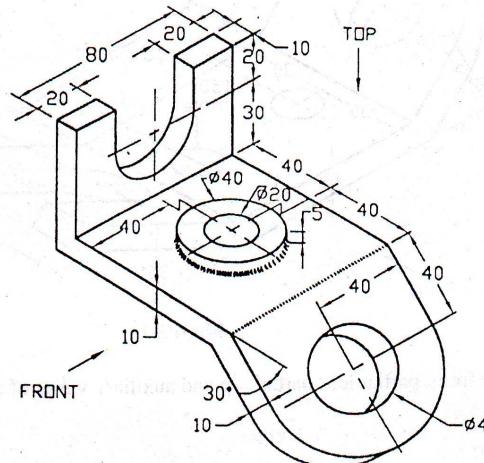
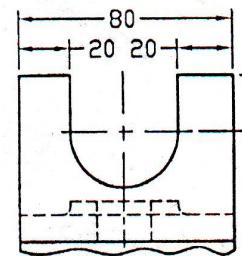
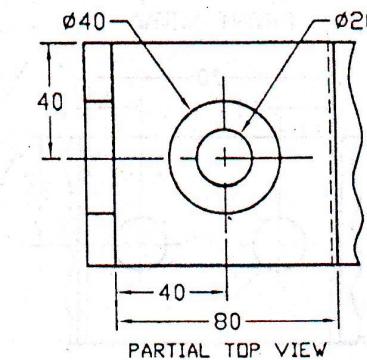


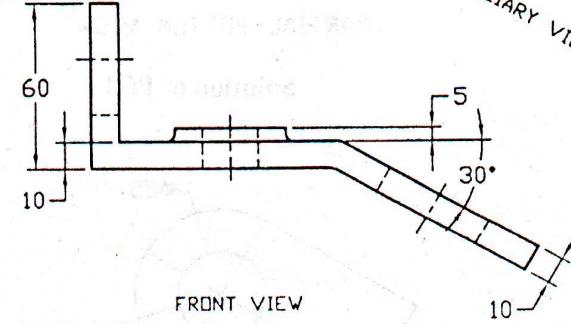
Fig. P5.3



PARTIAL LEFT SIDE VIEW



PARTIAL TOP VIEW



FRONT VIEW

Solution of P5.3

# Auxiliary View

Prob. 5.5: Draw front, partial bottom and auxiliary views of the fixer plate as shown in Fig. P5.5.

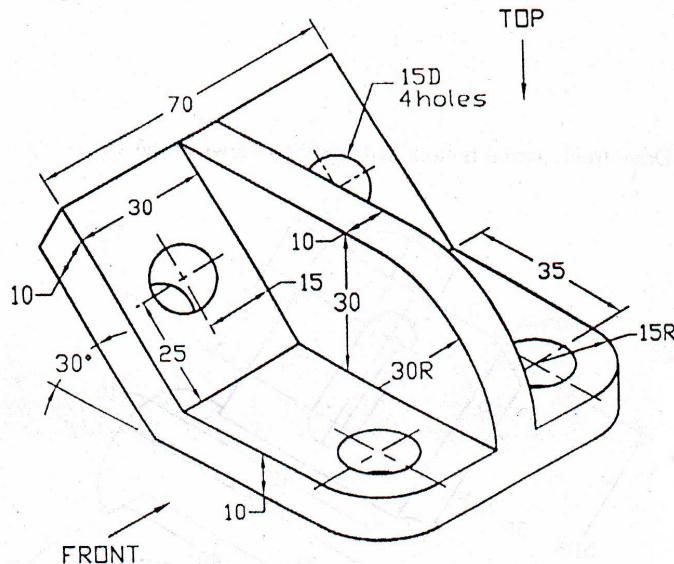
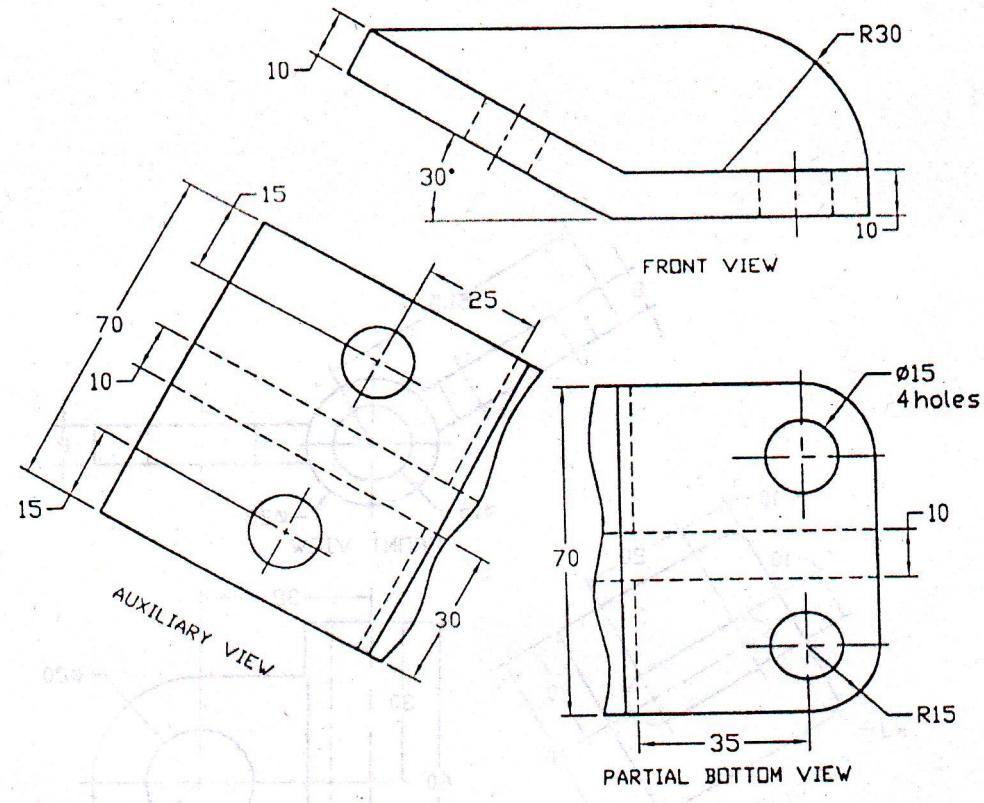


Fig. P5.5



Solution of P5.5

# Auxiliary View

Prob. 5.6: Draw front, partial bottom, partial left side and auxiliary views of the clip as shown in Fig. P5.6.

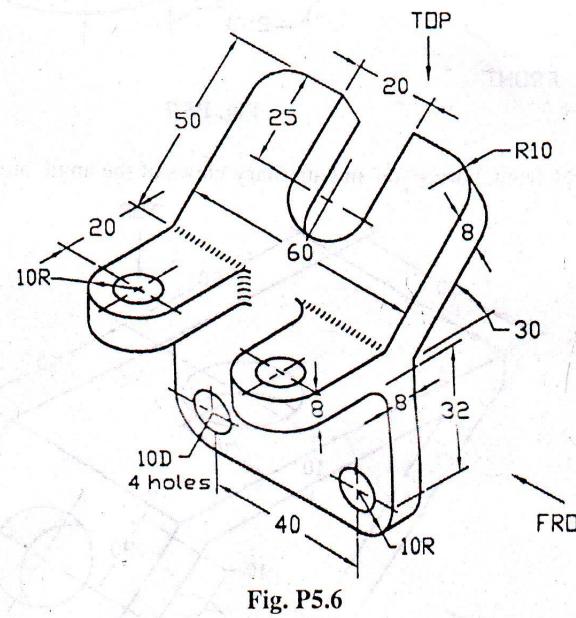
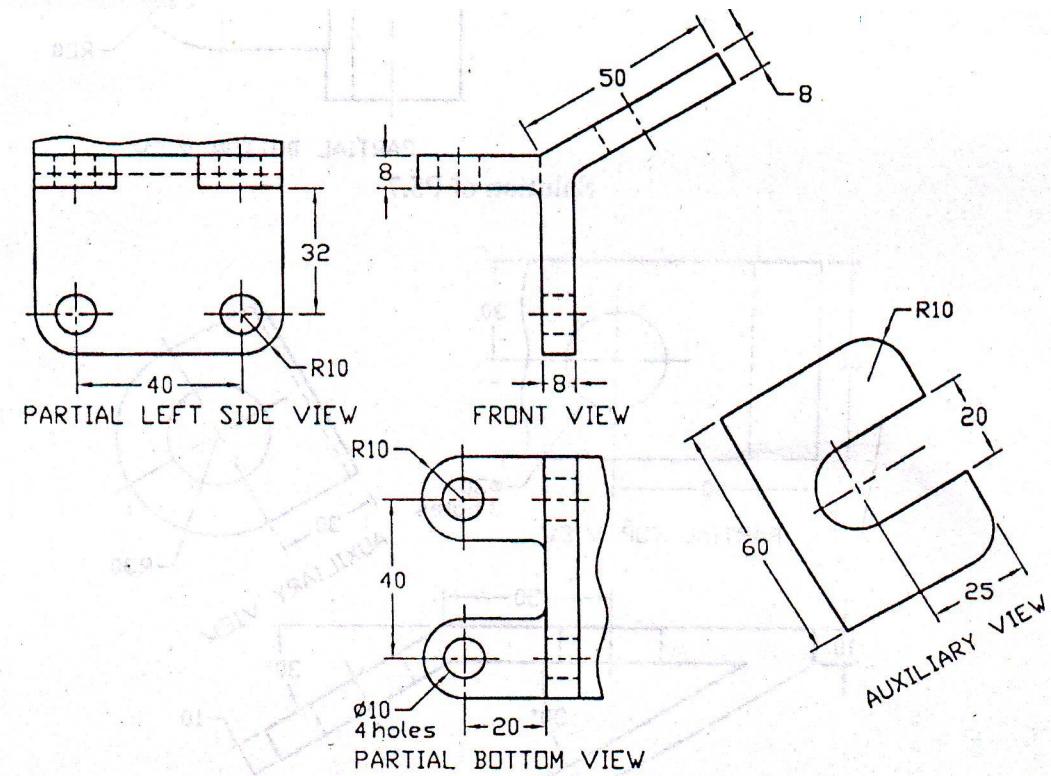


Fig. P5.6



Solution of P5.6

# Auxiliary View

Prob. 5.7: Draw front, partial bottom and auxiliary views of the support bracket as shown in Fig.

P5.7.

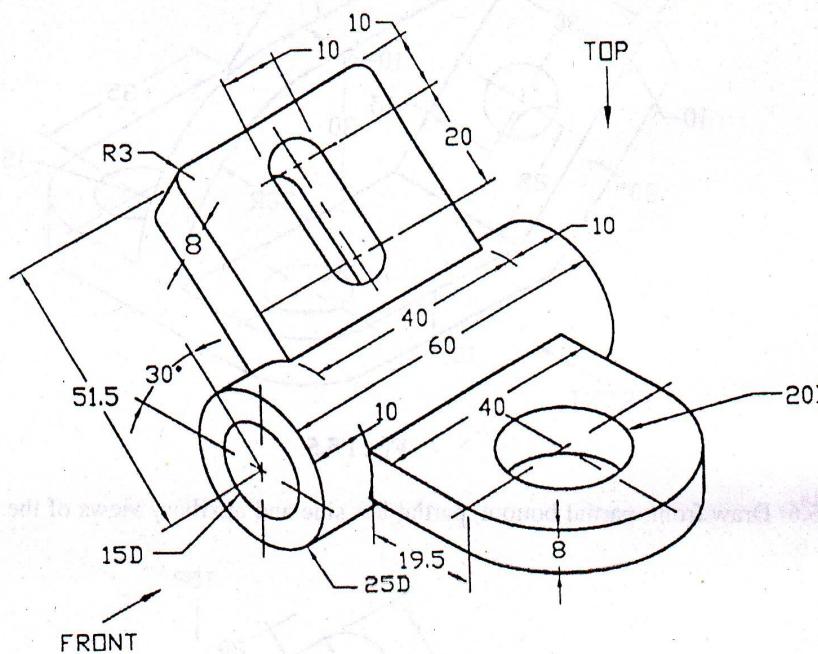
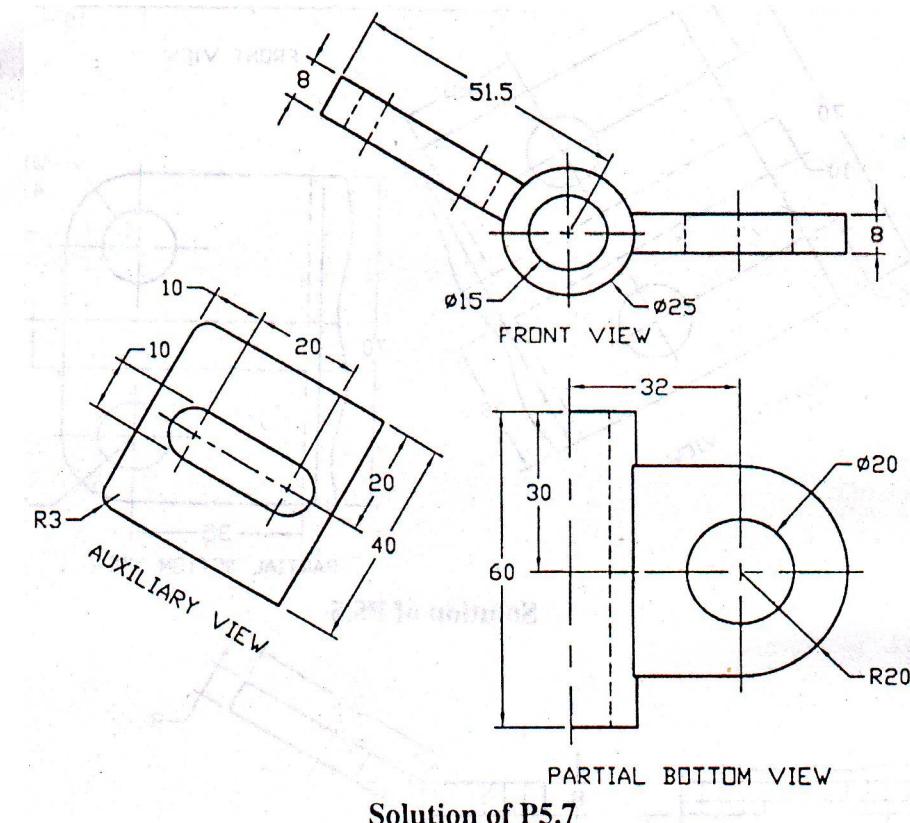


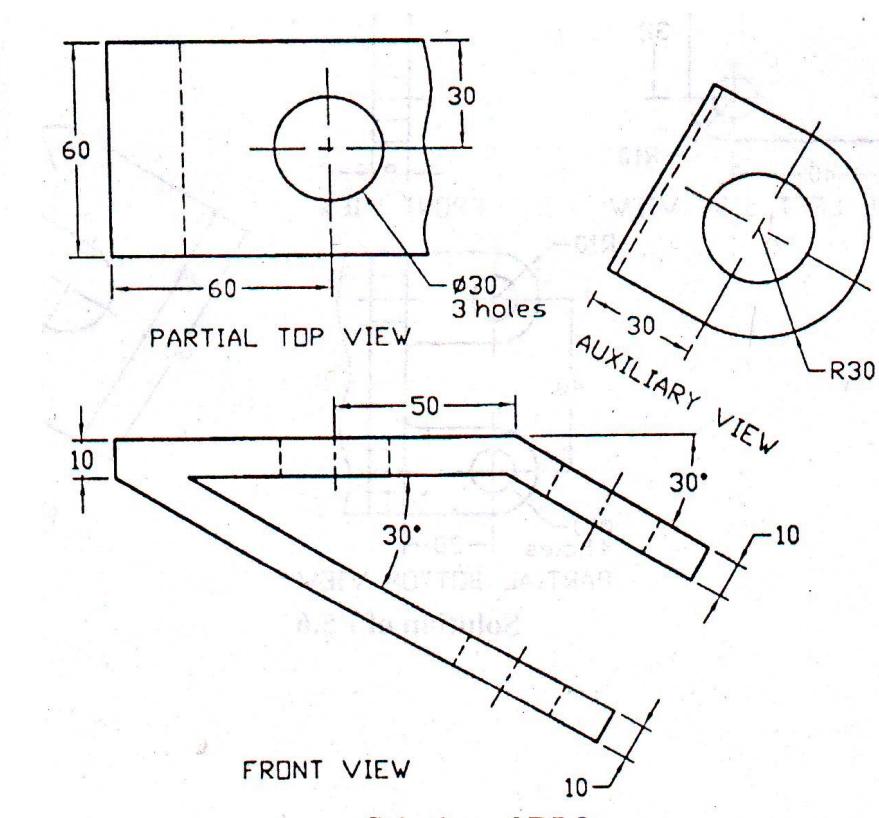
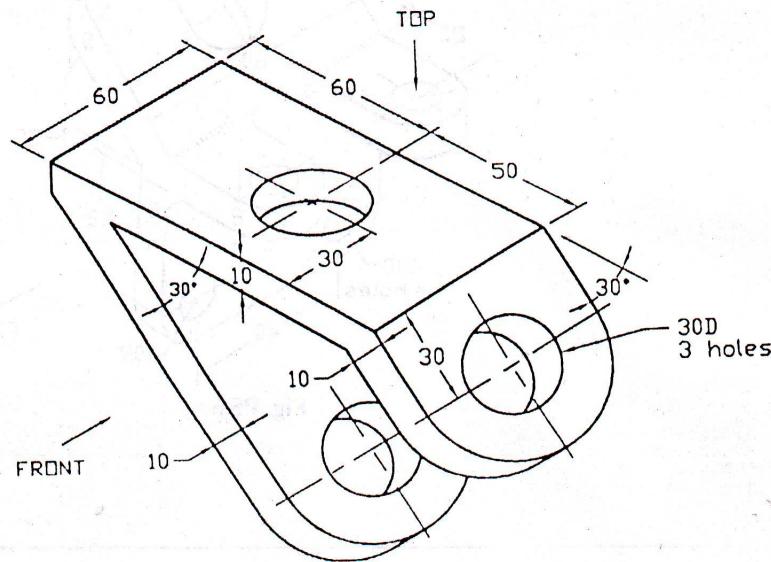
Fig. P5.7



Solution of P5.7

# Auxiliary View

Prob. 5.8: Draw front, partial top and auxiliary views of the angle bracket as shown in Fig. P5.8.



Solution of P5.8

**Prob. 5.10:** Draw top, partial front and auxiliary views of the connector as shown in Fig. P5.

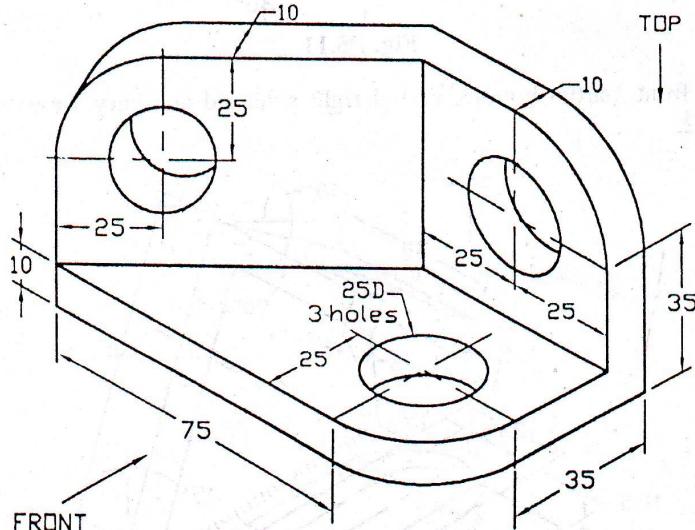
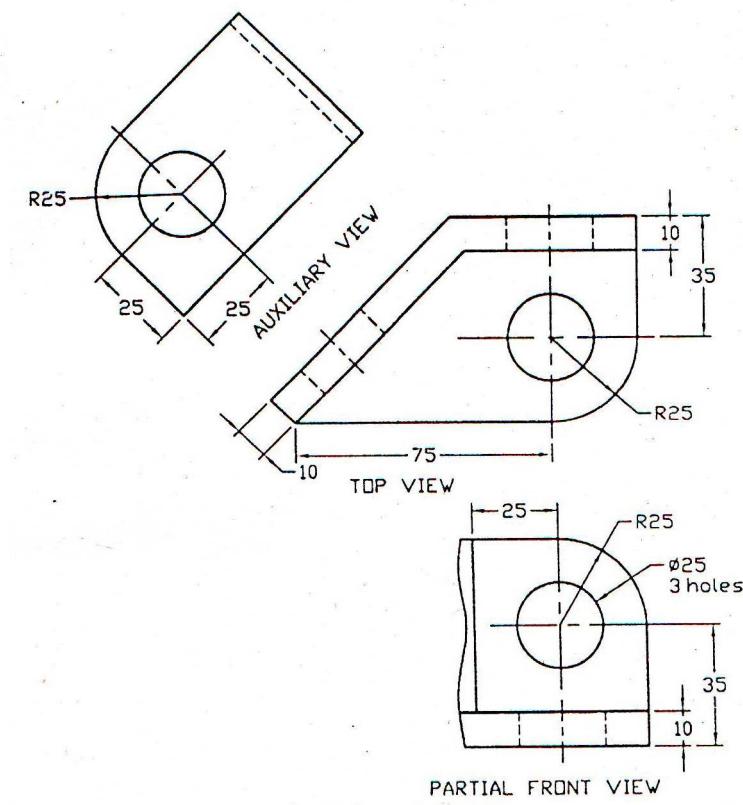
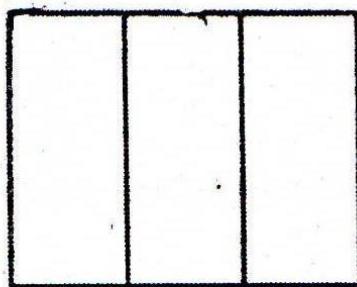


Fig. P5.10

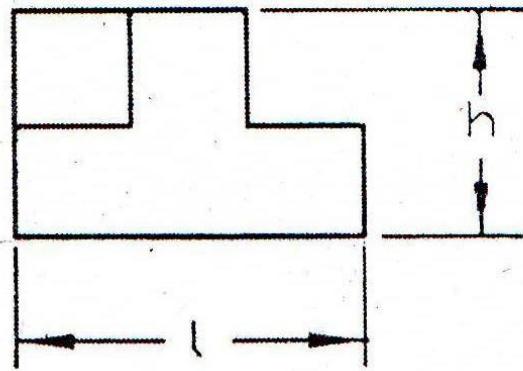


Solution of P5.10

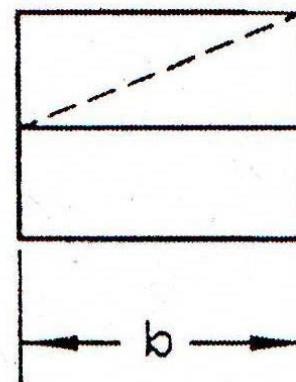
# Isometric Drawing



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

# Isometric Drawing

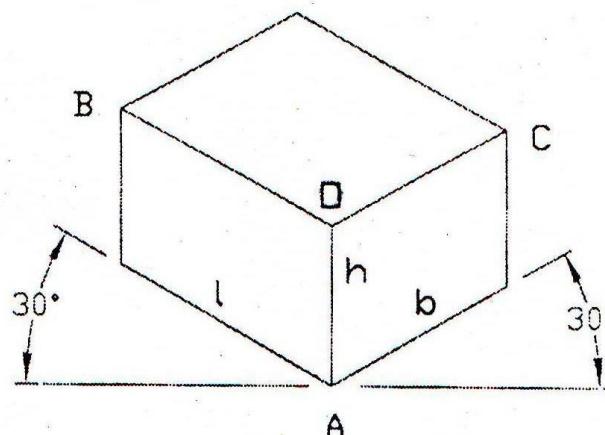


Figure 6.12: Isometric Parallelepiped

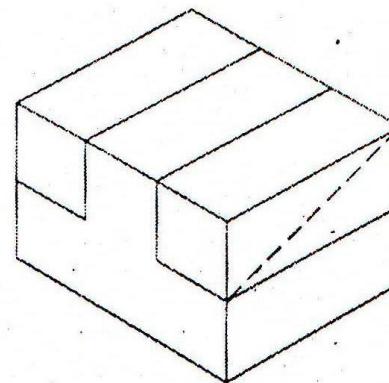


Figure 6.13: Views on Each Side

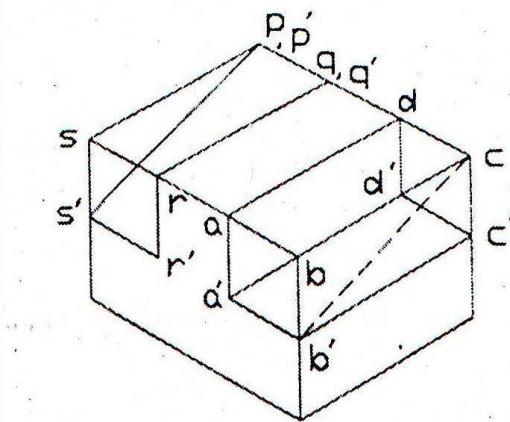


Figure 6.14: Shifting of Surfaces

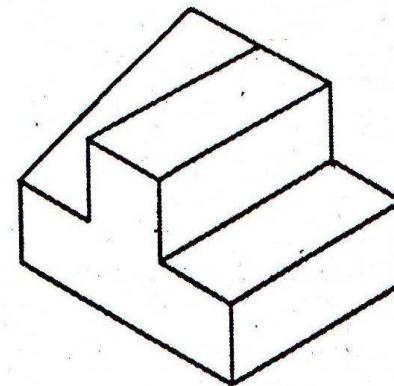
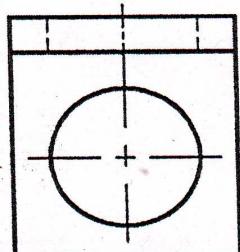
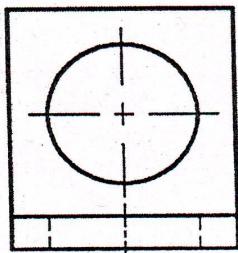


Figure 6.15: Isometric View

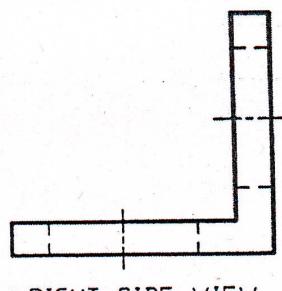
# Isometric Drawing



TOP VIEW



FRONT VIEW



RIGHT SIDE VIEW

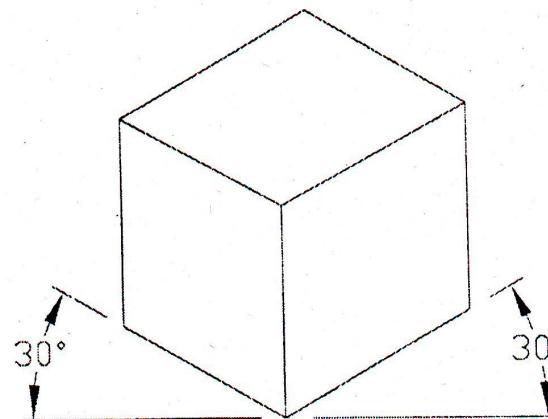


Figure 6.24: Making Parallelepiped

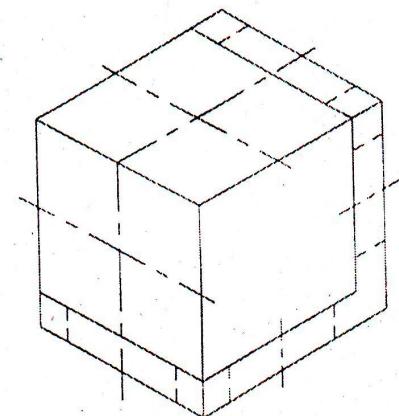
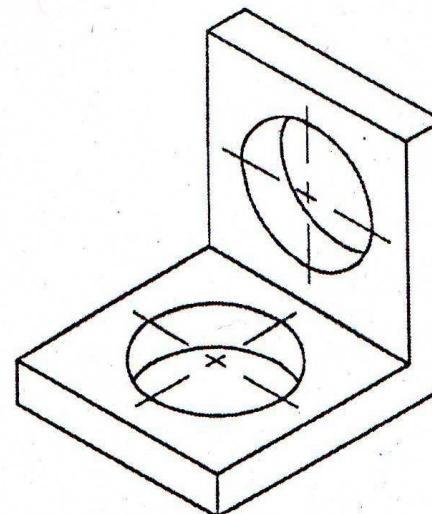
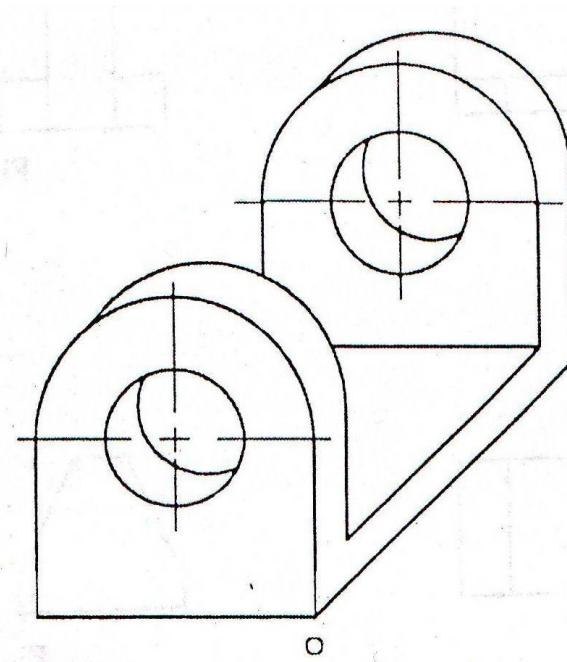
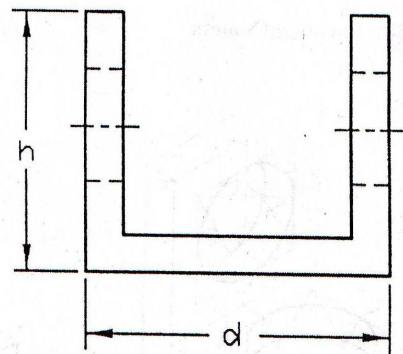
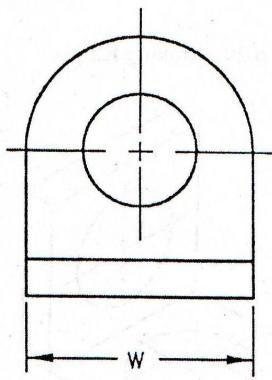
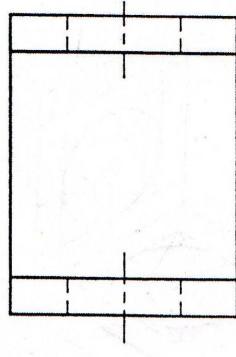


Figure 6.25: Views on Faces



# Isometric Drawing



# Isometric Drawing

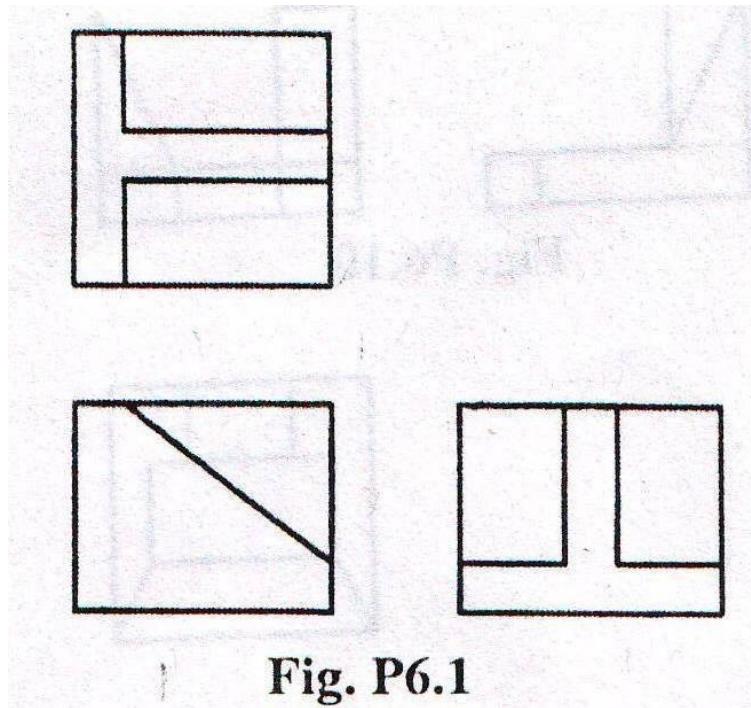
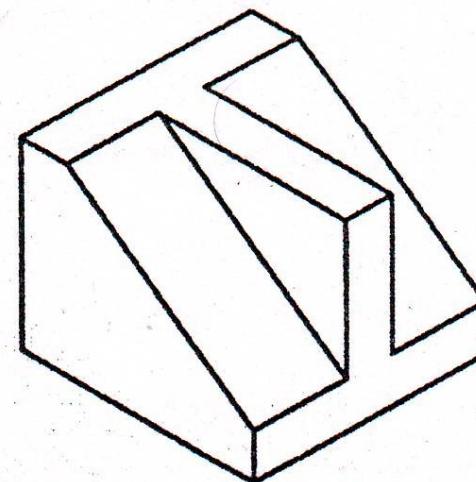


Fig. P6.1



Solution of P6.1

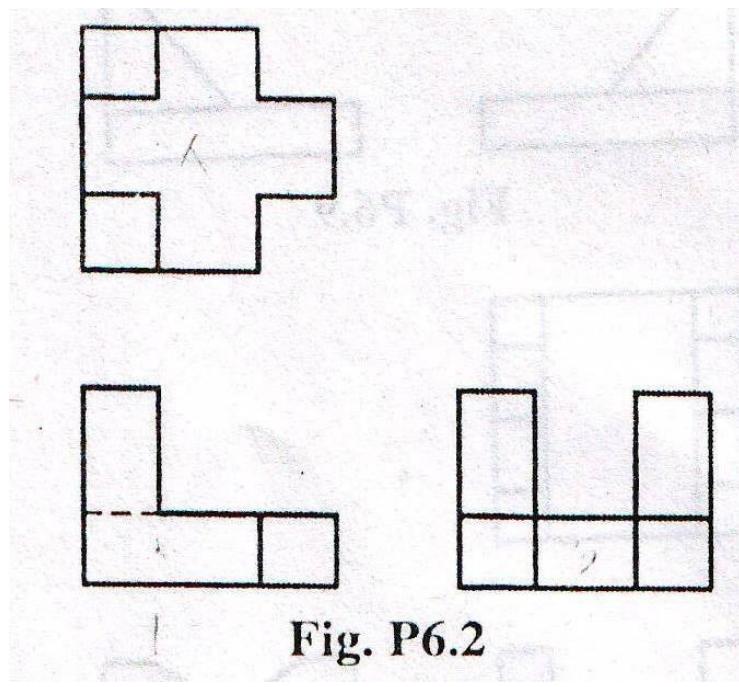
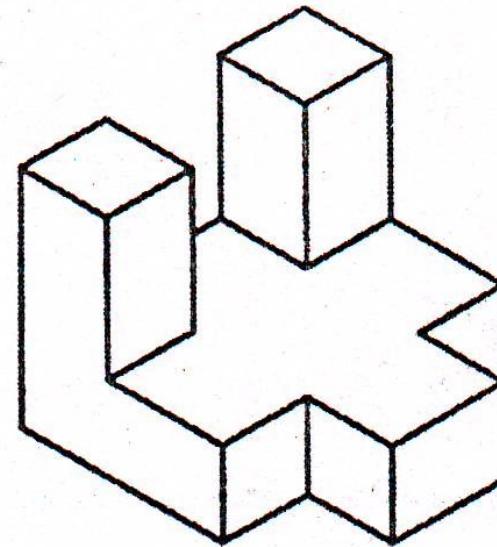


Fig. P6.2



Solution of P6.2

# Isometric Drawing

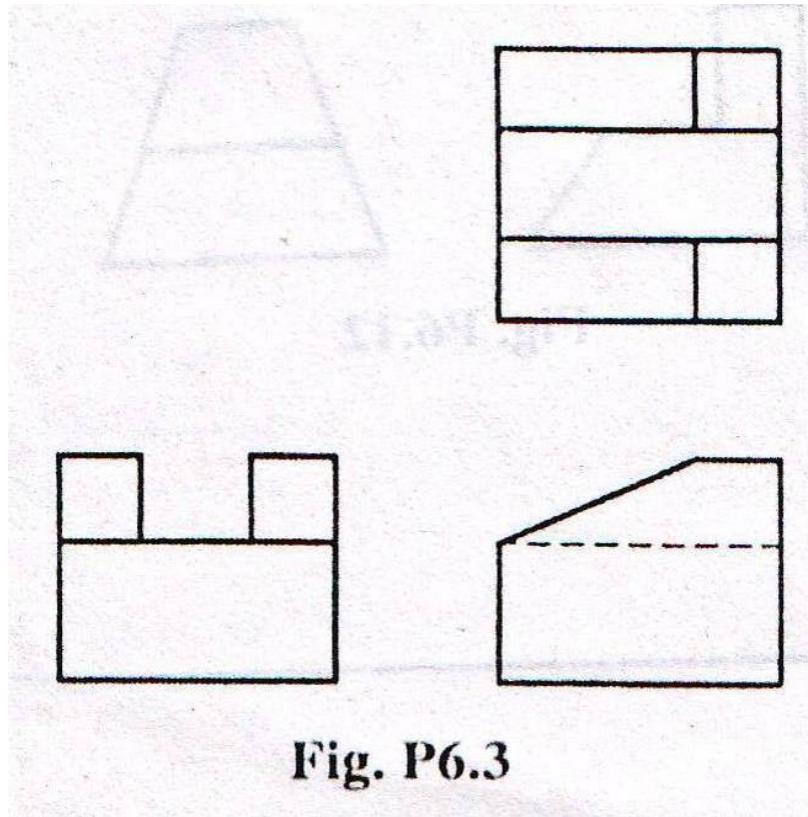
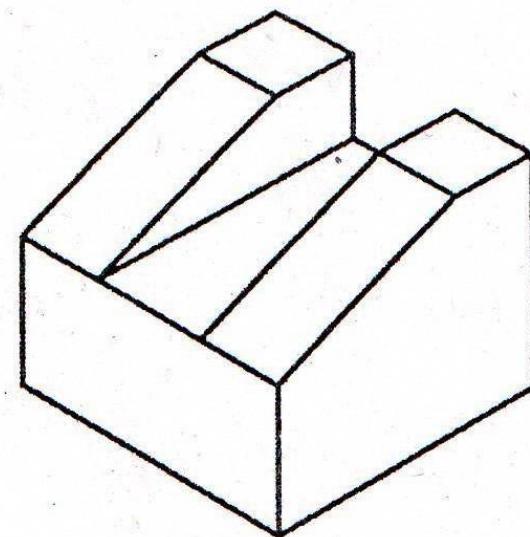


Fig. P6.3



Solution of P6.3

# Isometric Drawing

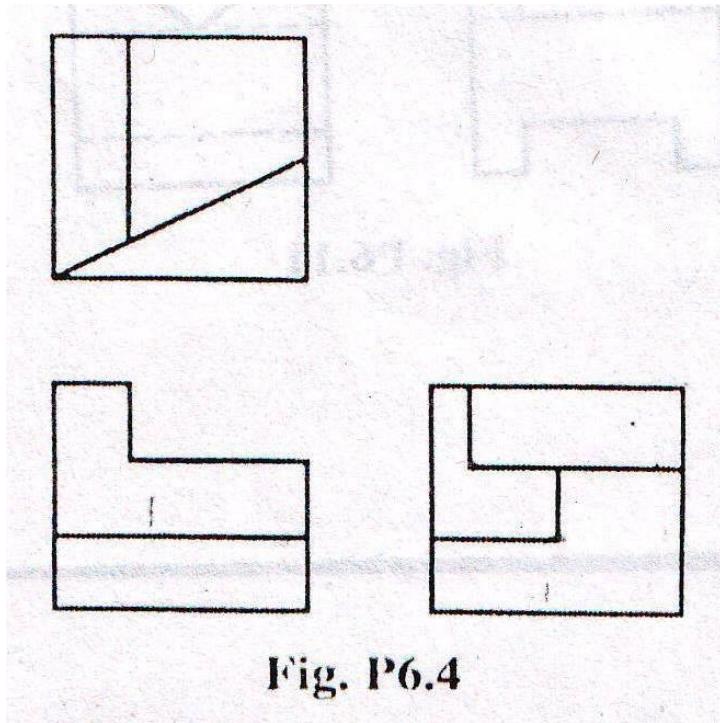
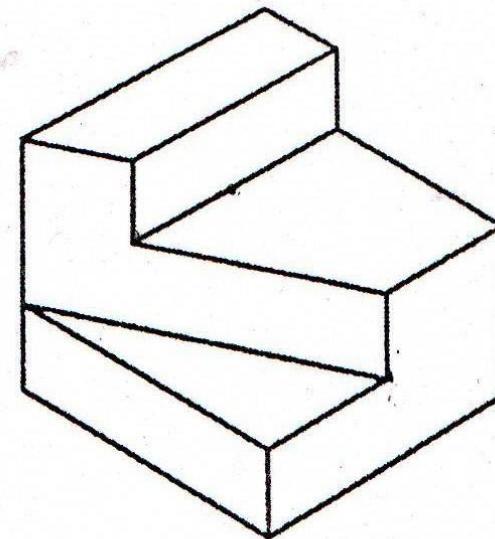


Fig. P6.4



Solution of P6.4

# Isometric Drawing

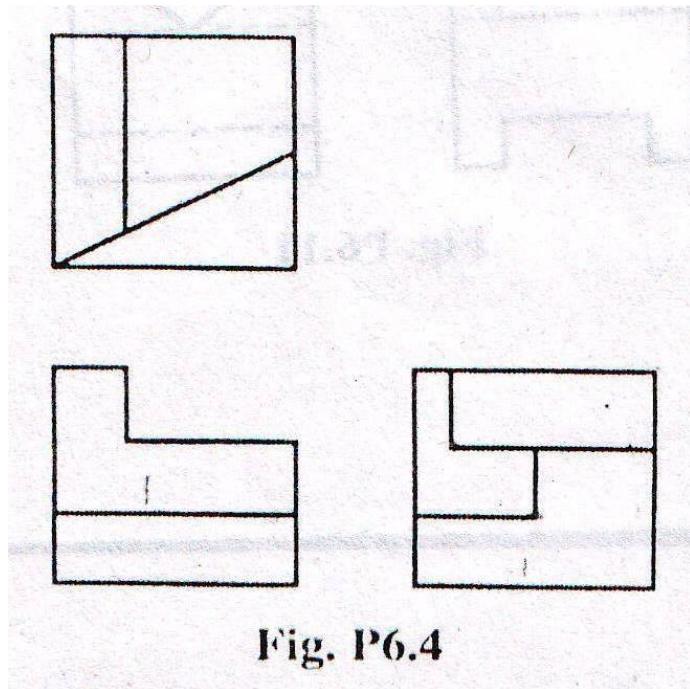
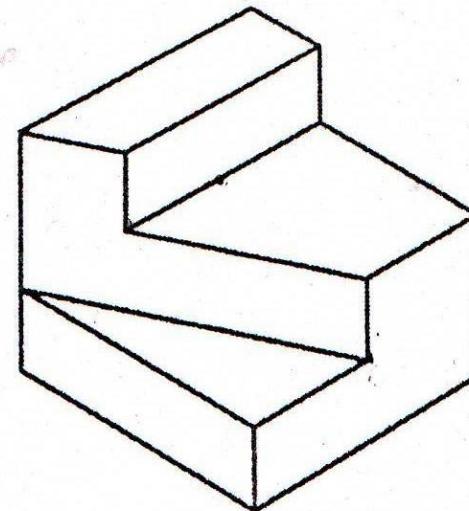
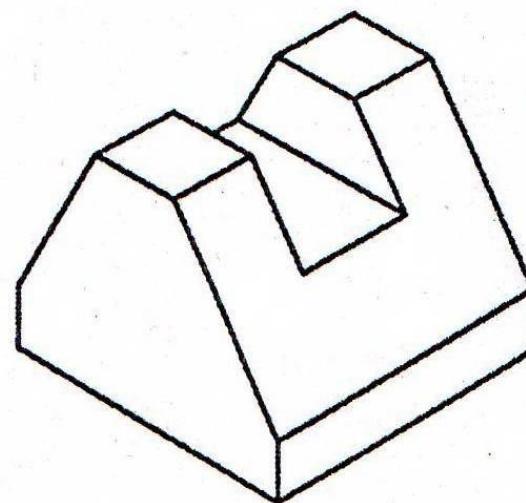
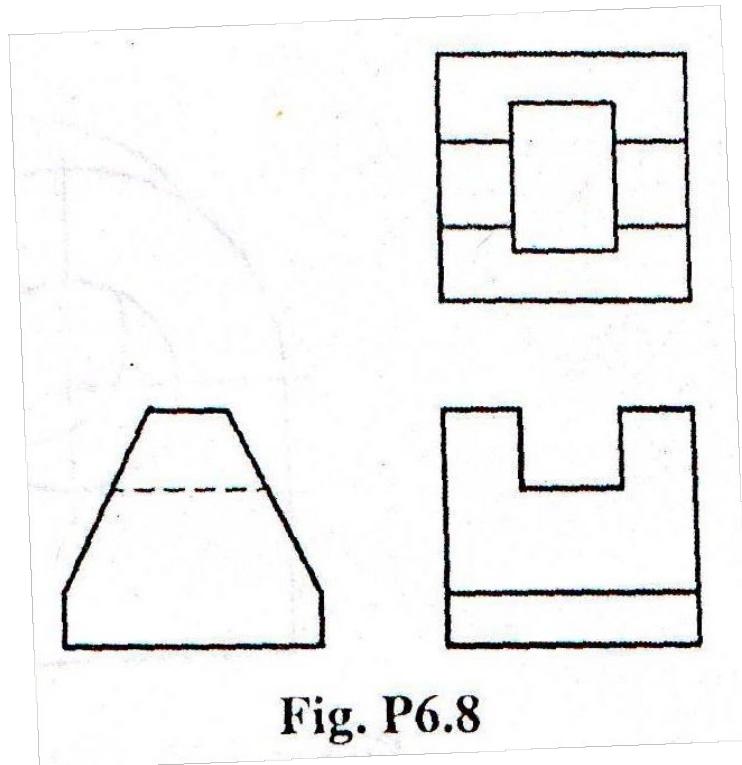


Fig. P6.4



Solution of P6.4

# Isometric Drawing



**Solution of P6.8**

# Isometric Drawing

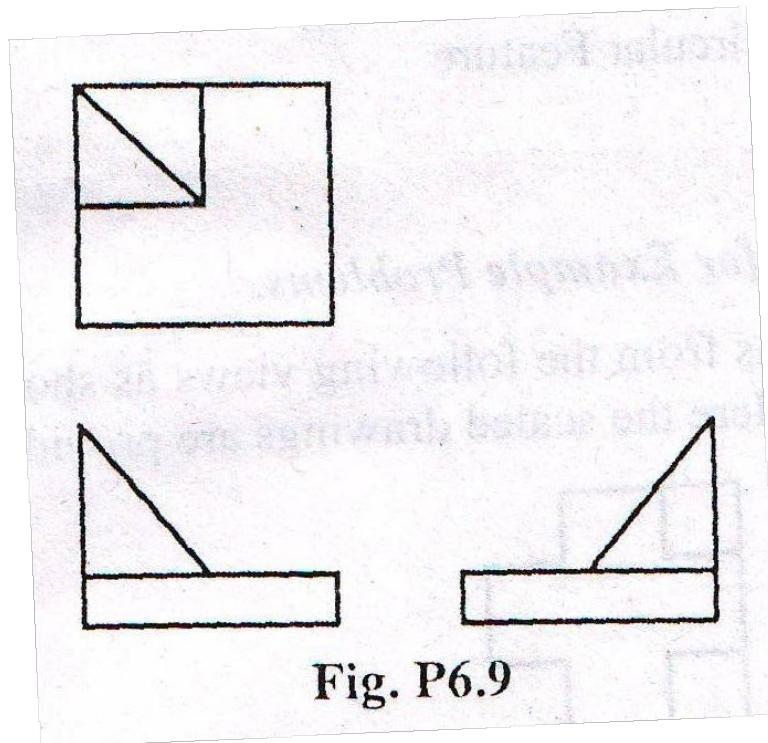
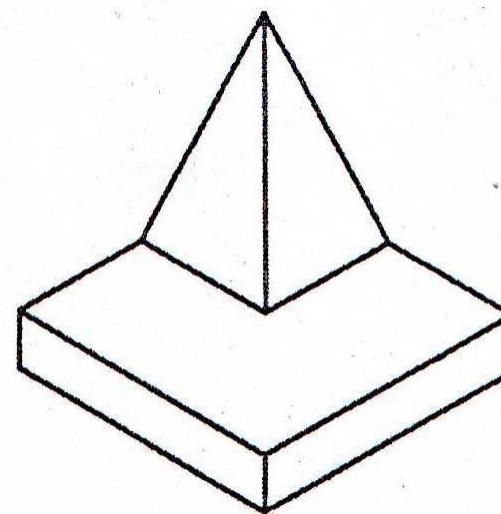


Fig. P6.9



Solution of P6.9

# Isometric Drawing

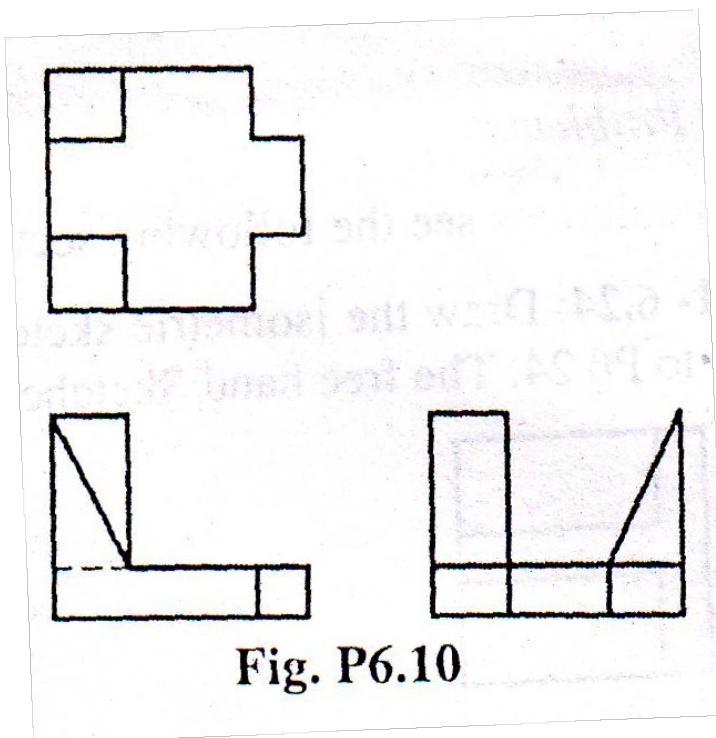
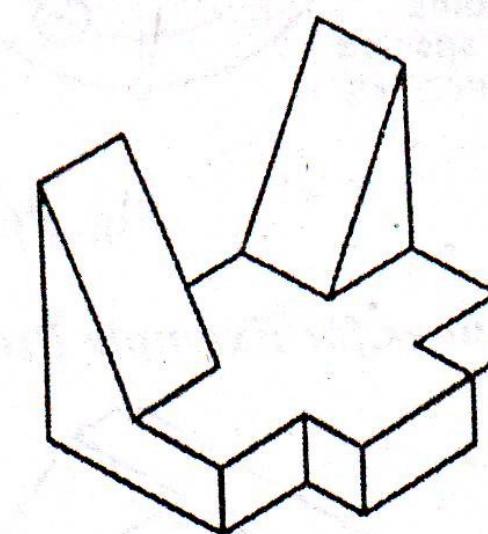


Fig. P6.10



Solution of P6.10

# Isometric Drawing

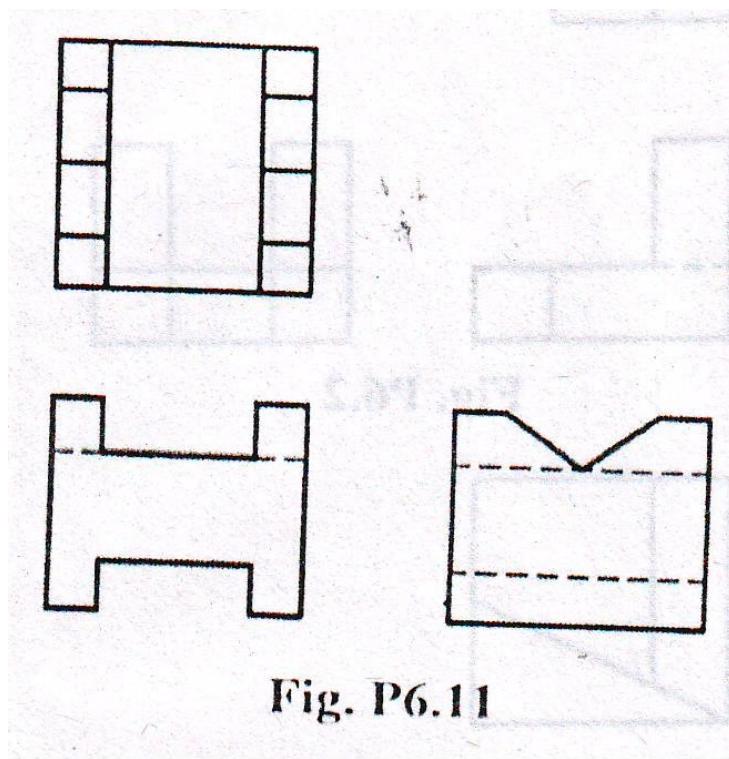
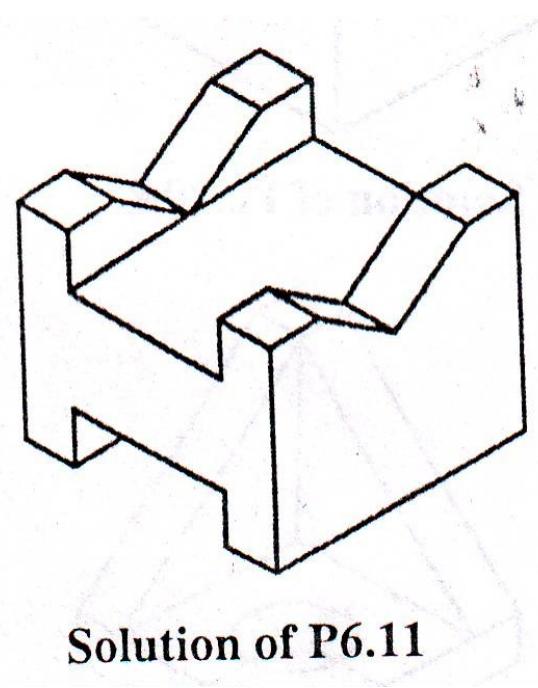


Fig. P6.11



Solution of P6.11

# Isometric Drawing

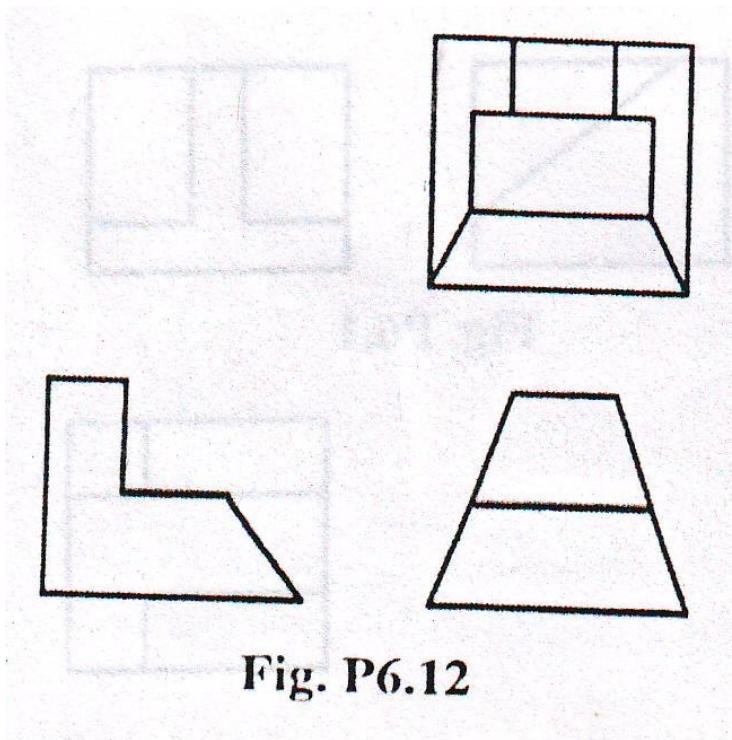
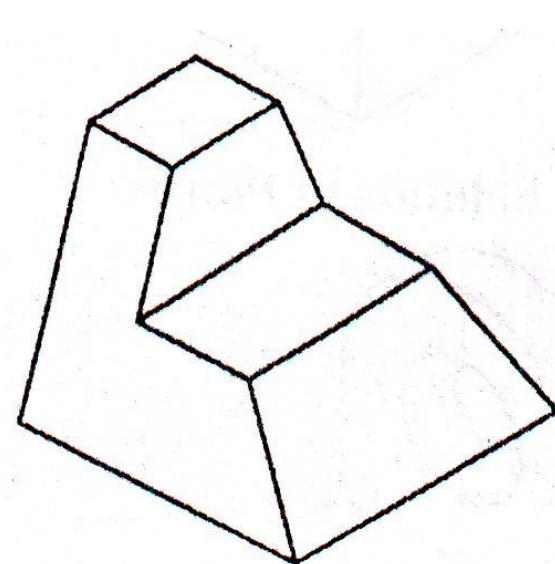


Fig. P6.12



Solution of P6.12

# Isometric Drawing

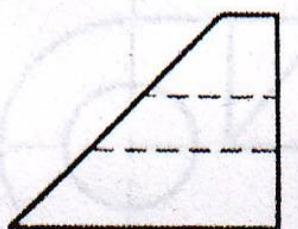
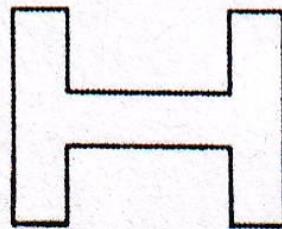
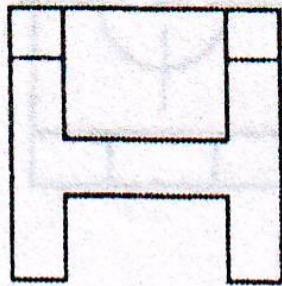
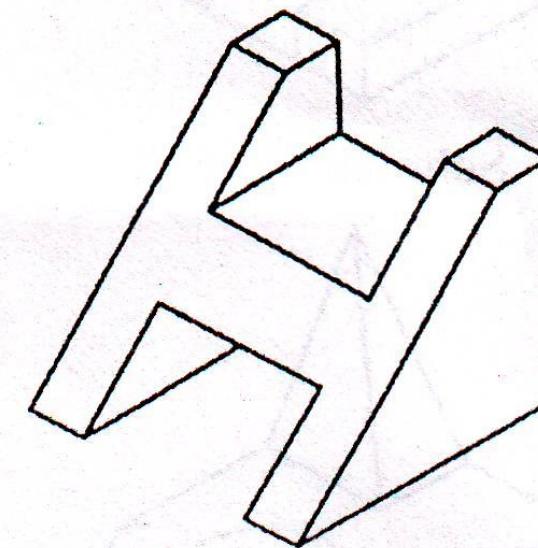


Fig. P6.14



Solution of P6.14

# Isometric Drawing

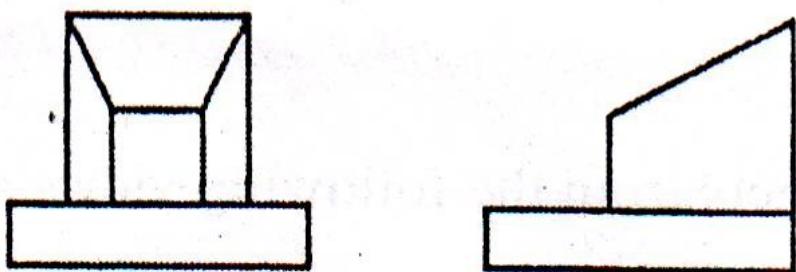
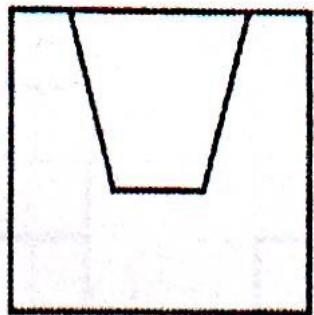
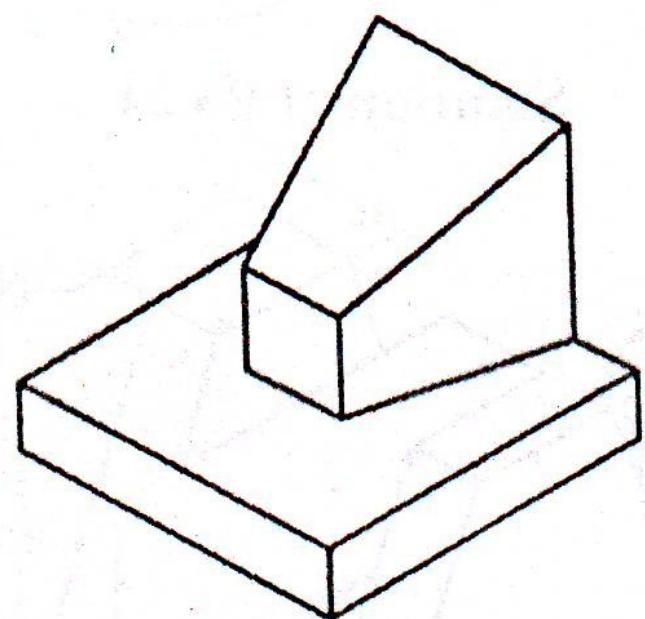


Fig. P6.15



Solution of P6.15

# Isometric Drawing

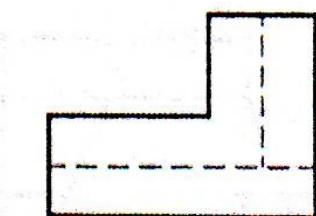
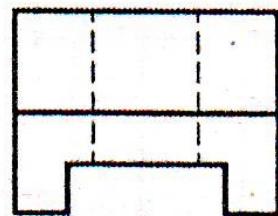
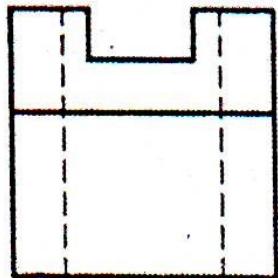
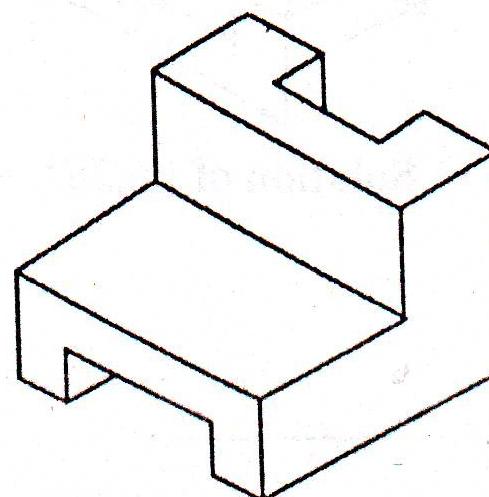
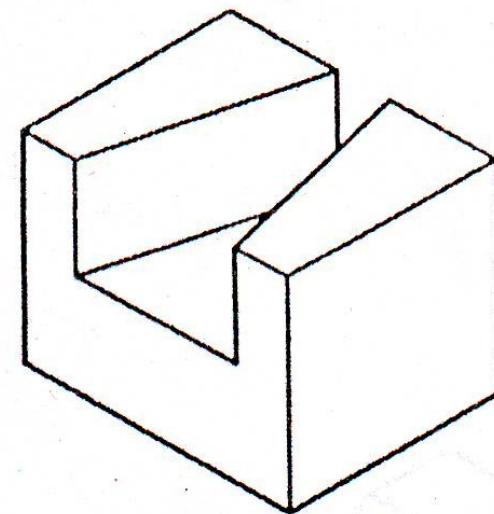
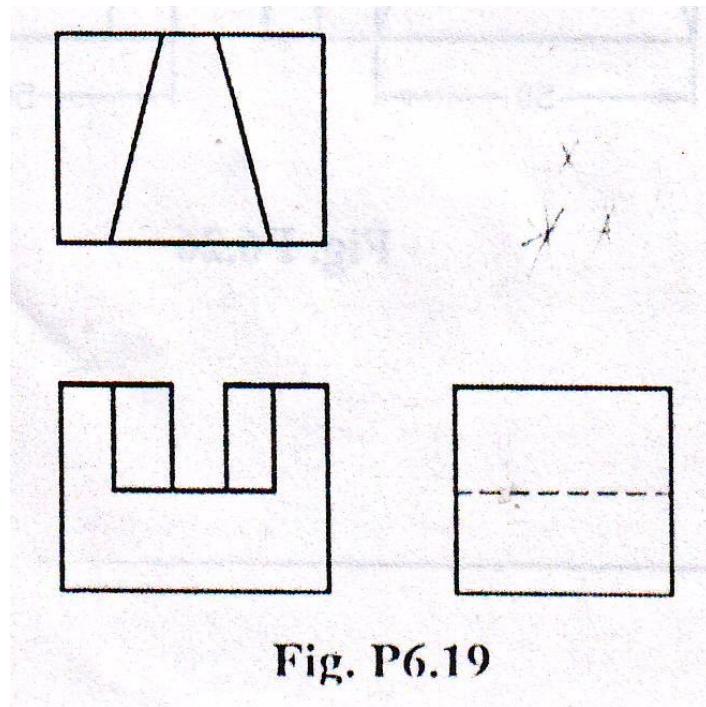


Fig. P6.17



Solution of P6.17

# Isometric Drawing



Solution of P6.19

# Isometric Drawing

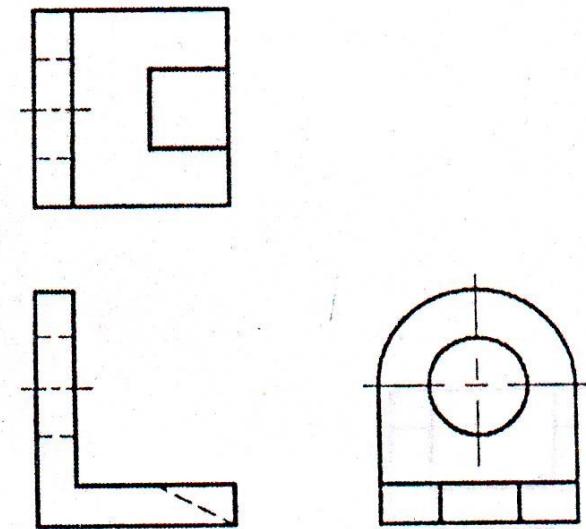
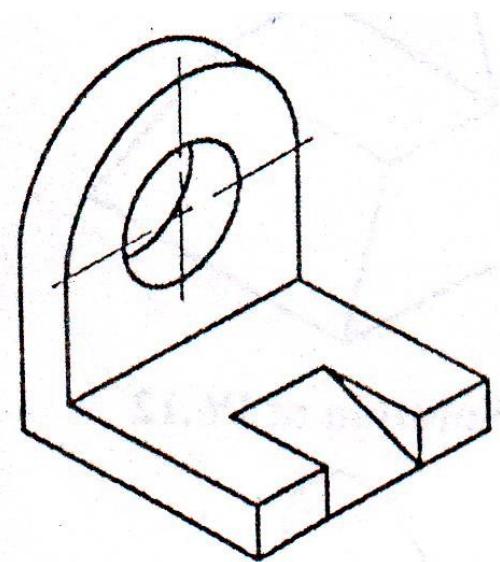


Fig. P6.21



Solution of P6.21

# Isometric Drawing

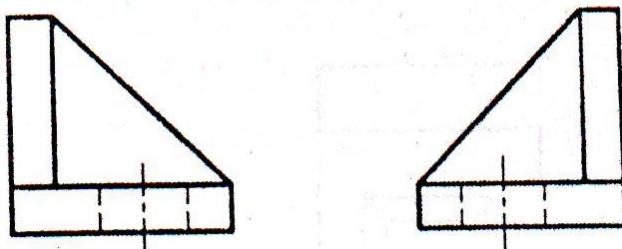
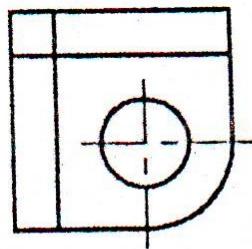
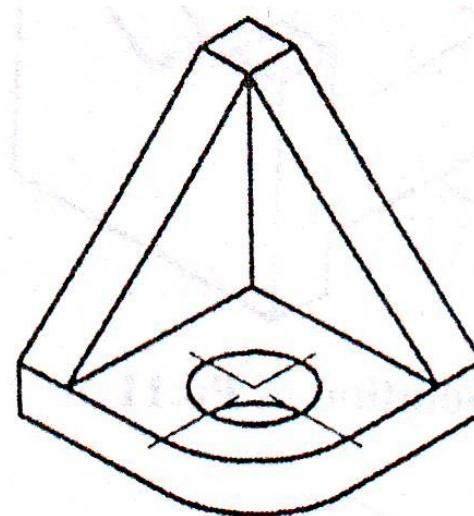


Fig. P6.22



Solution of P6.22

# Isometric Drawing

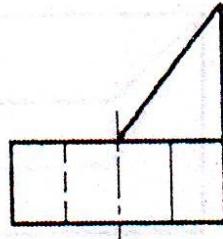
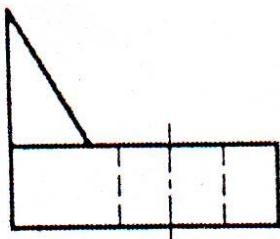
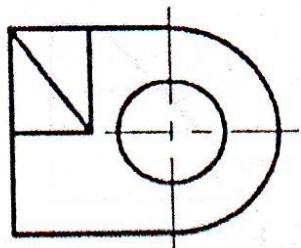
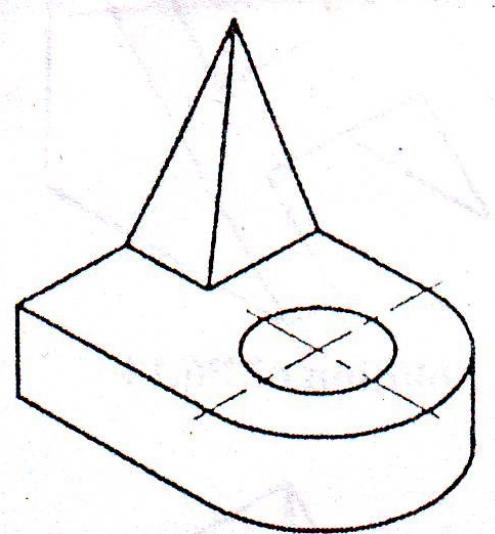


Fig. P6.23



Solution of P6.23

# Isometric Drawing

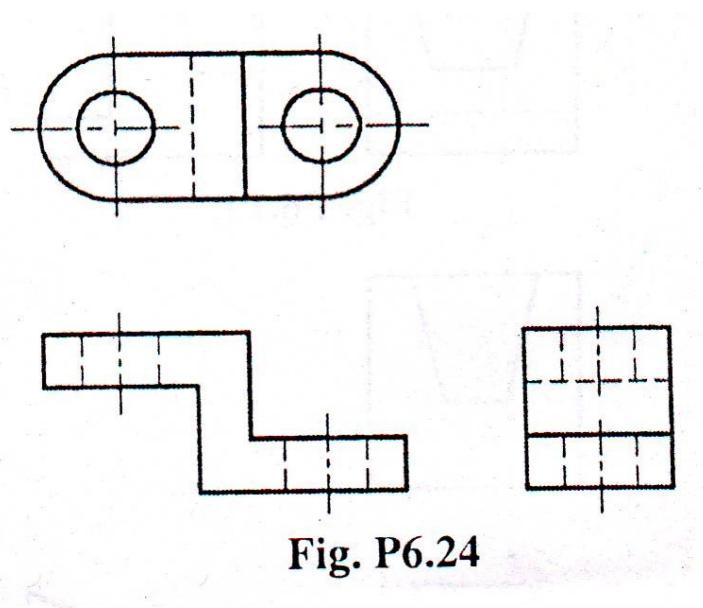
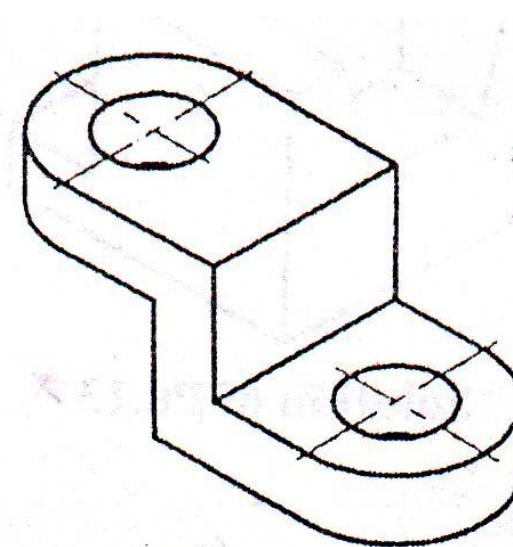
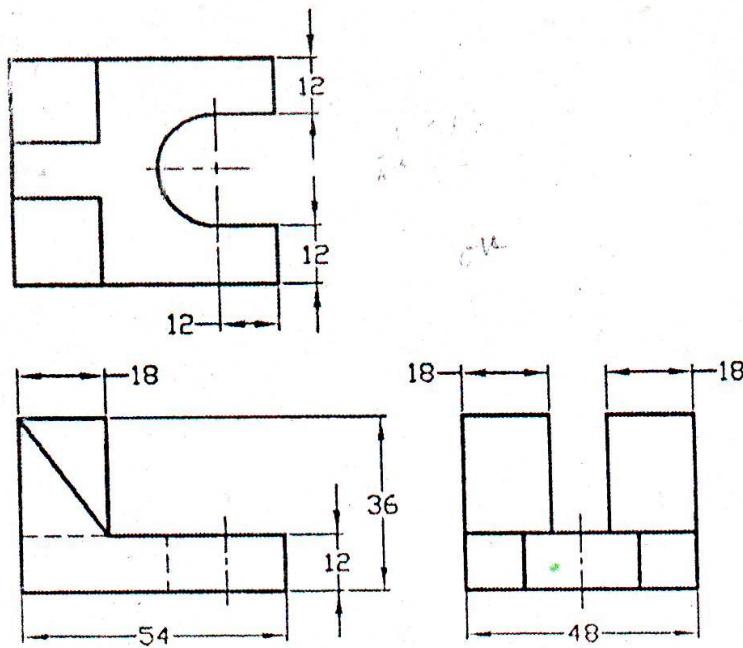


Fig. P6.24

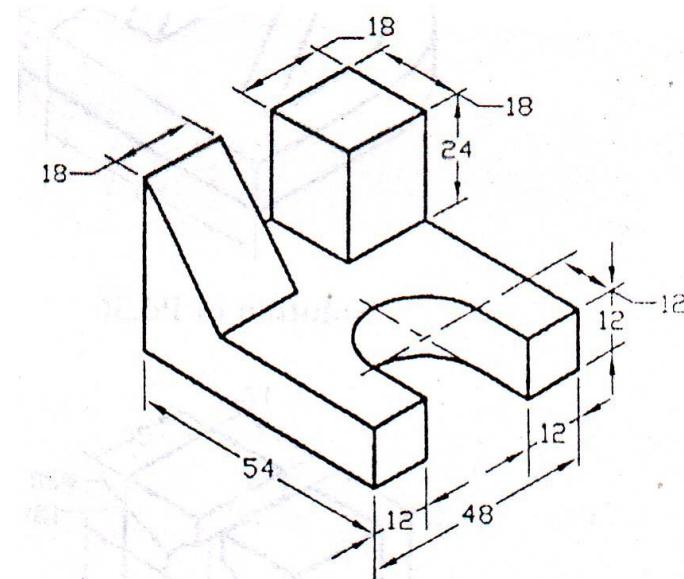


Solution of P6.24

# Isometric Drawing

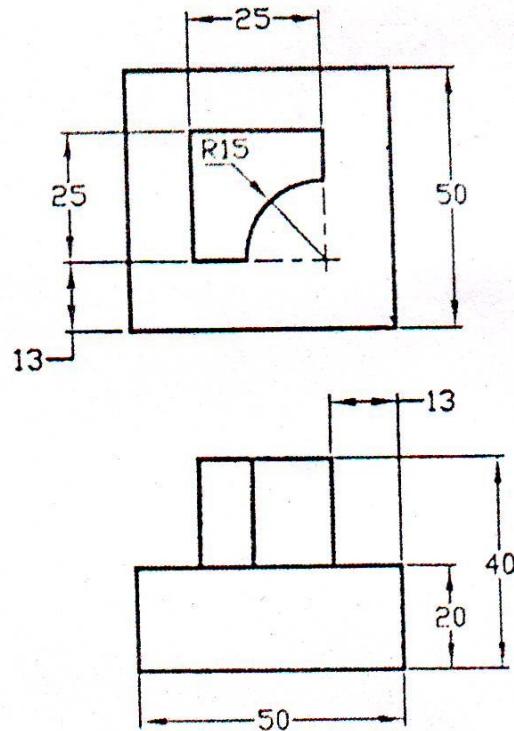


✓Fig. P6.29

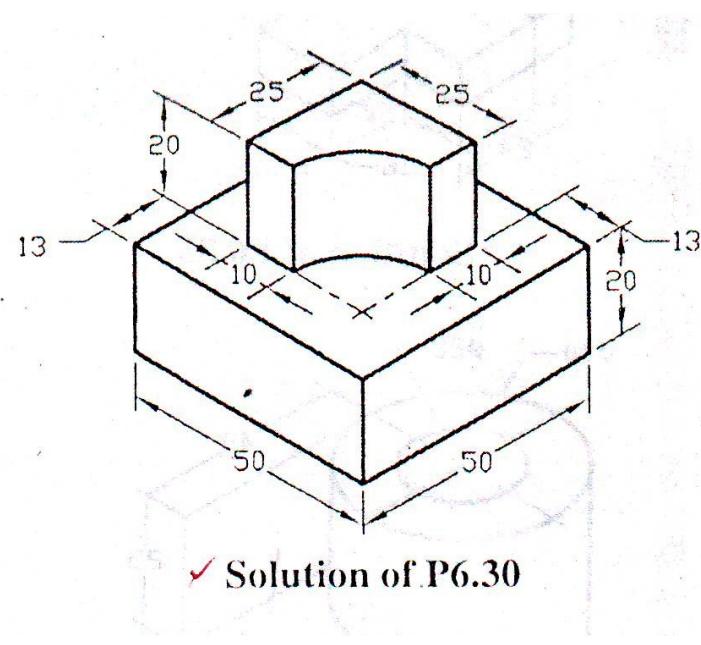


✓Solution of P6.29

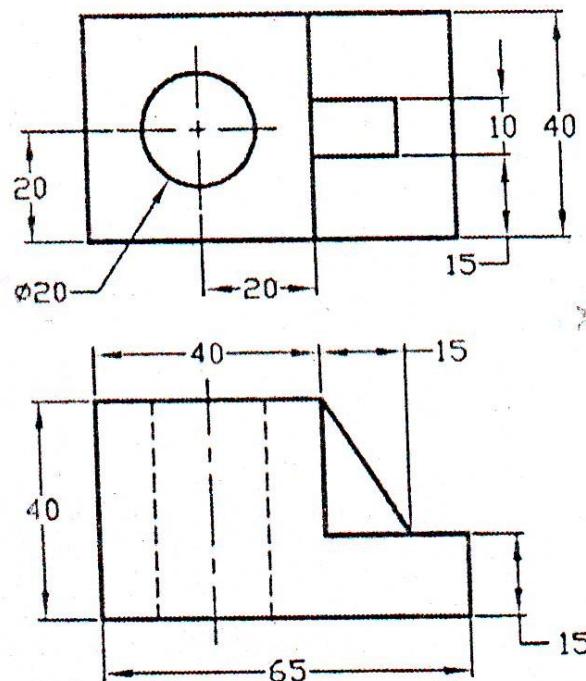
# Isometric Drawing



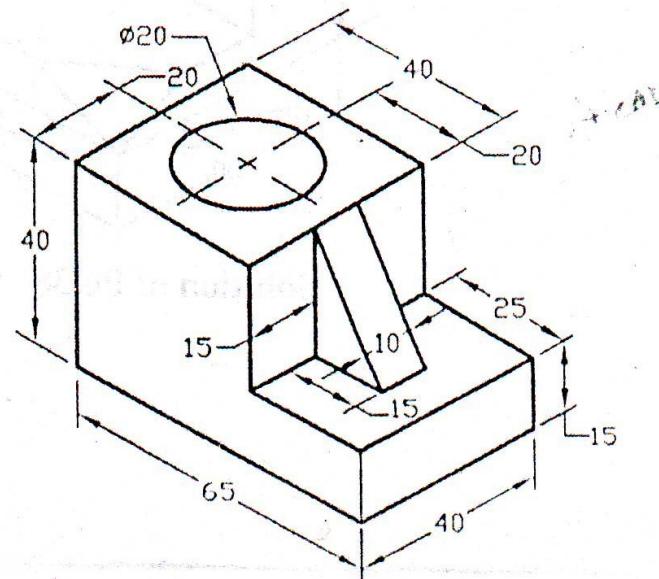
✓ Fig. P6.30



# Isometric Drawing



✓ Fig. P6.31



✓ Solution of P6.31

# Isometric Drawing

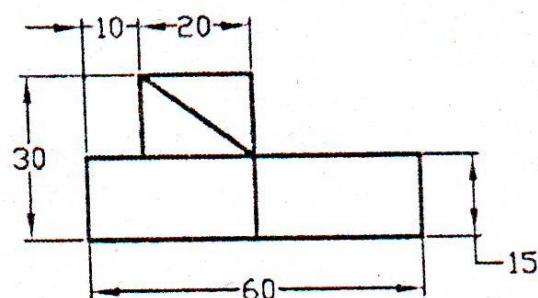
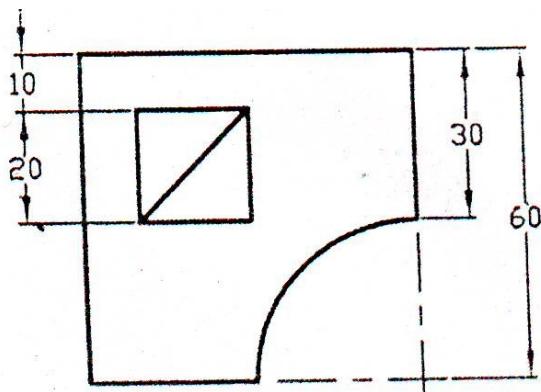
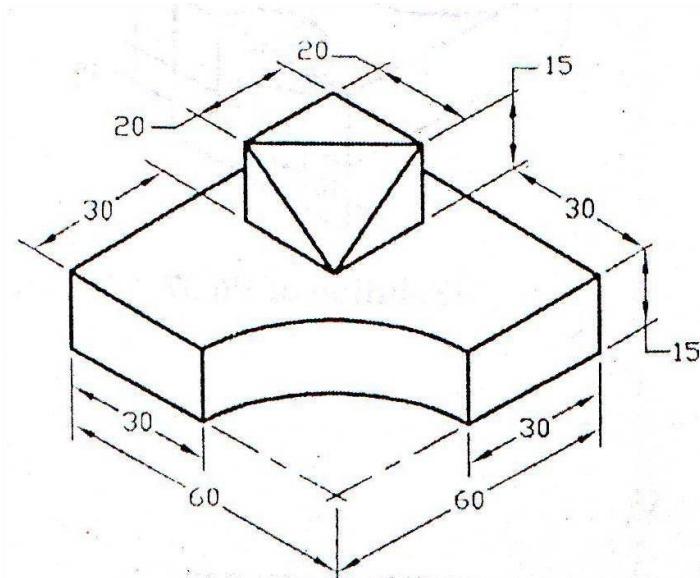
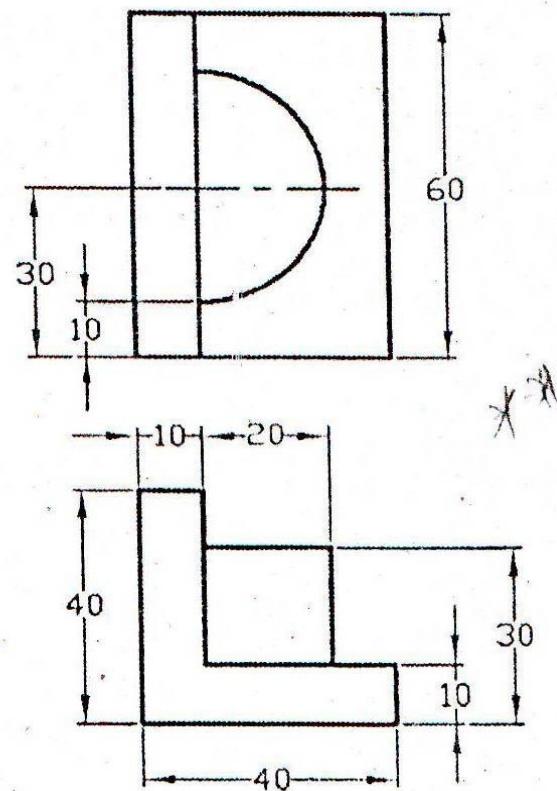


Fig. P6.32

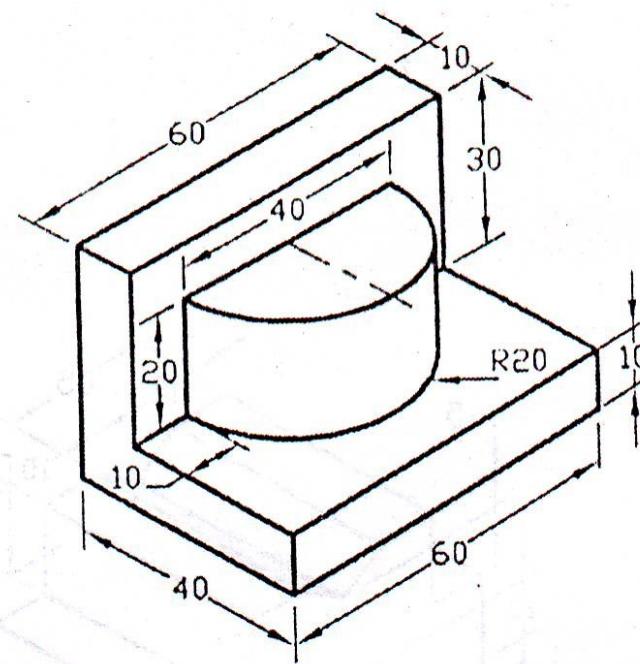


Solution of P6.32

# Isometric Drawing



✓ Fig. P6.34



Solution of P6.34

# Isometric Drawing

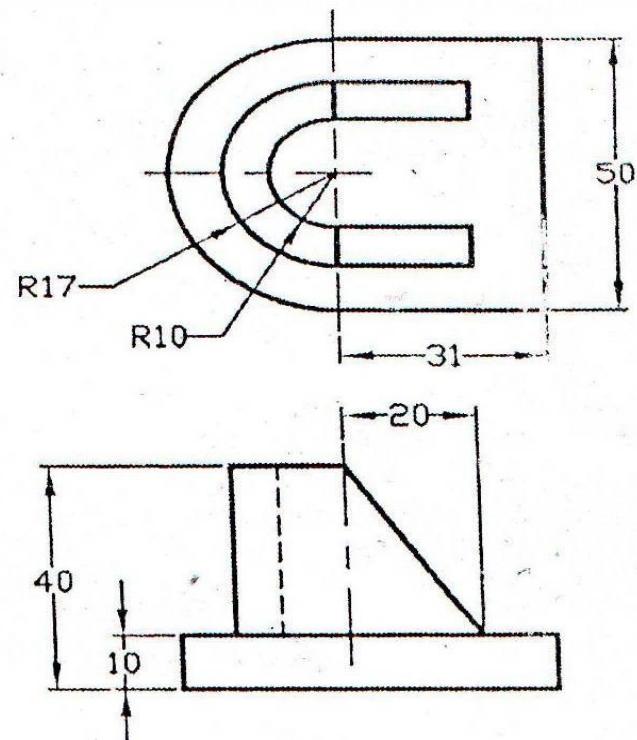
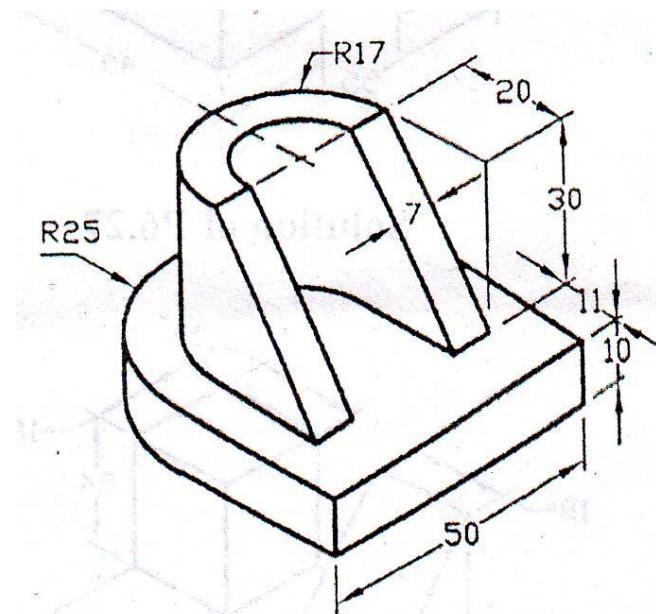
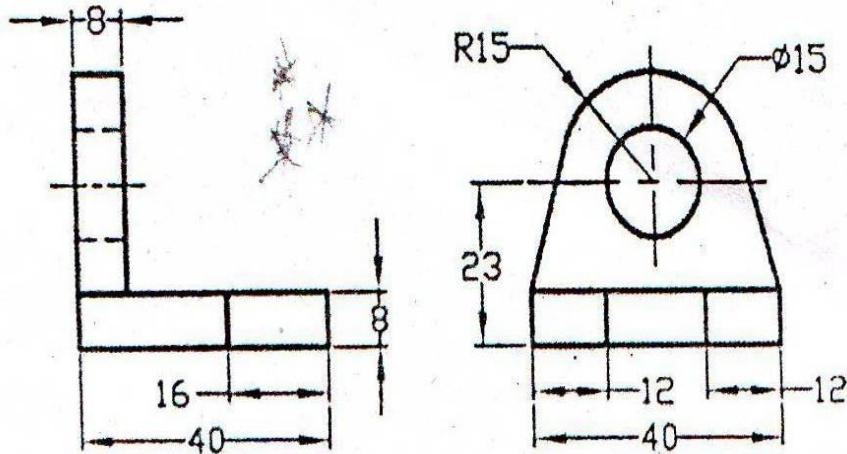


Fig. P6.36



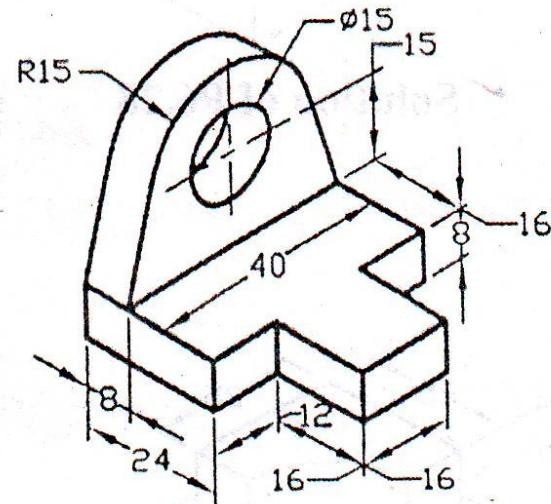
Solution of P6.36

# Isometric Drawing



✓Fig. P6.35

1



✓Solution of P6.35

# Isometric Drawing

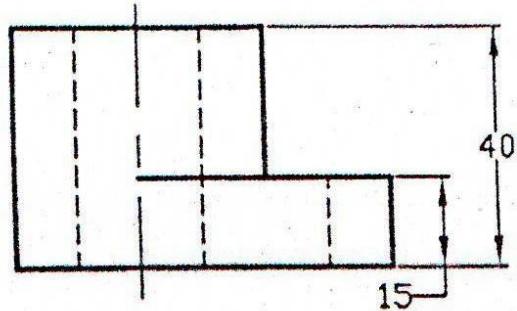
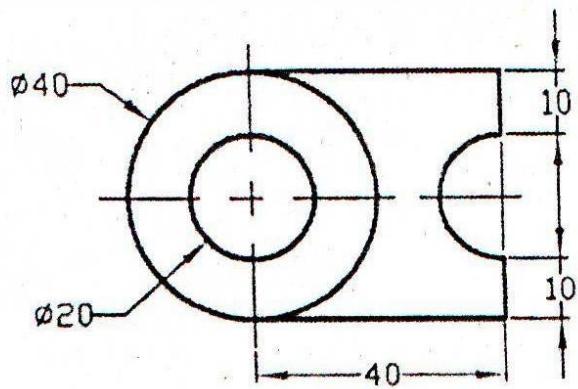
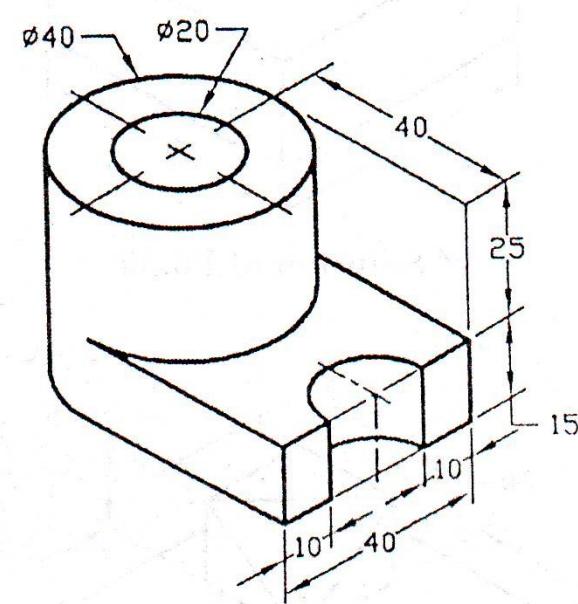
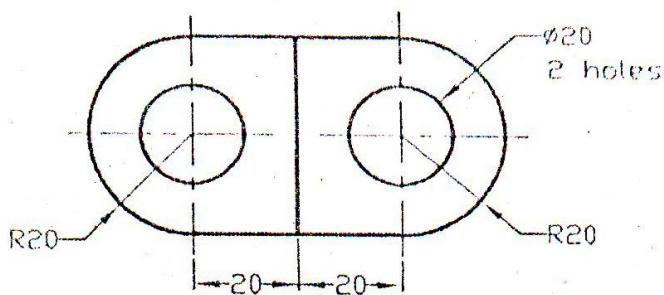
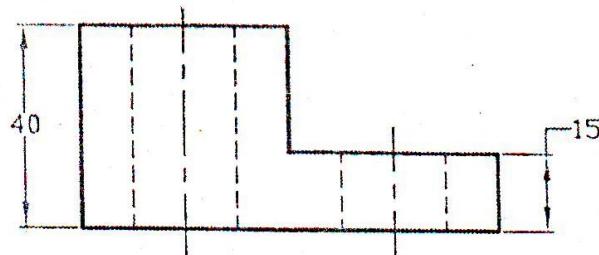


Fig. P6.37

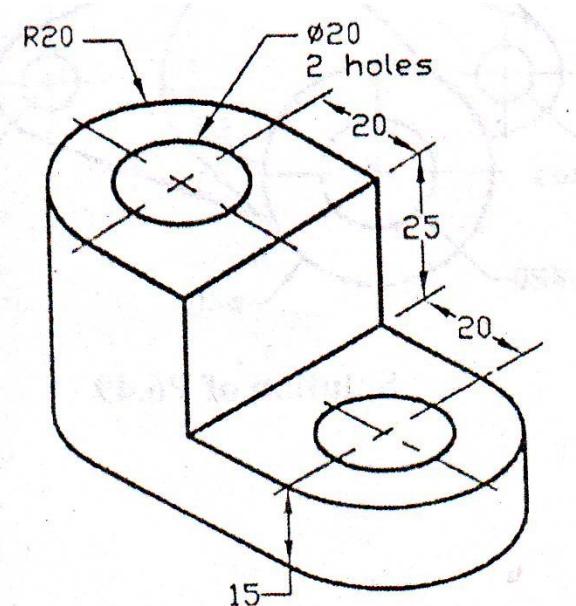


✓Solution of P6.37

# Isometric Drawing



✓Fig. P6.43



✓Solution of P6.43

# Isometric Drawing

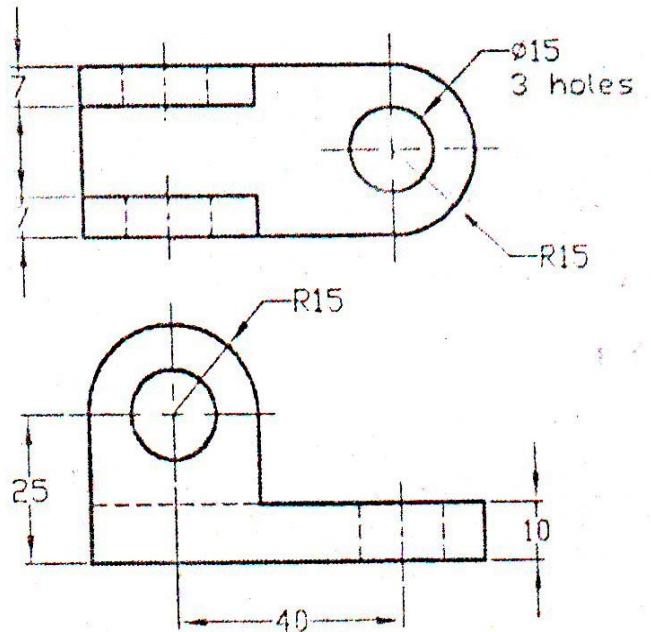
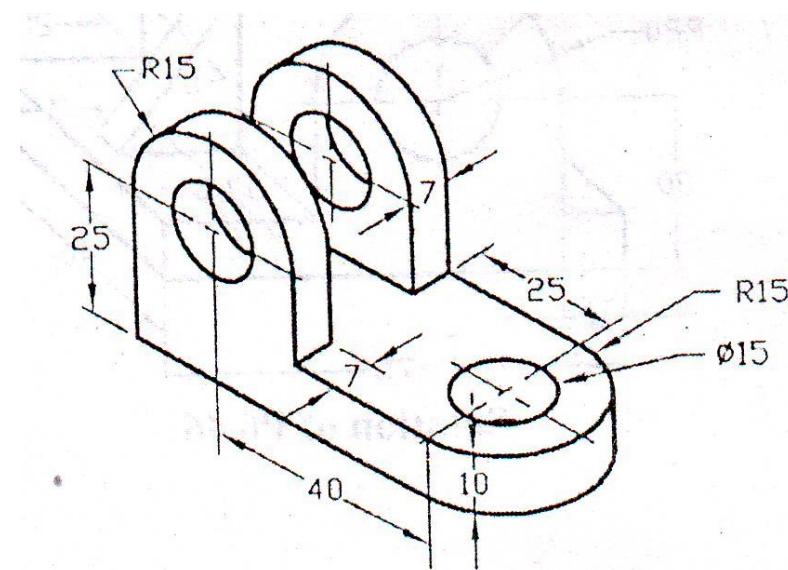


Fig. P6.42



✓Solution of P6.42