SRM
INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

18MES101L – Engineering Graphics and Design

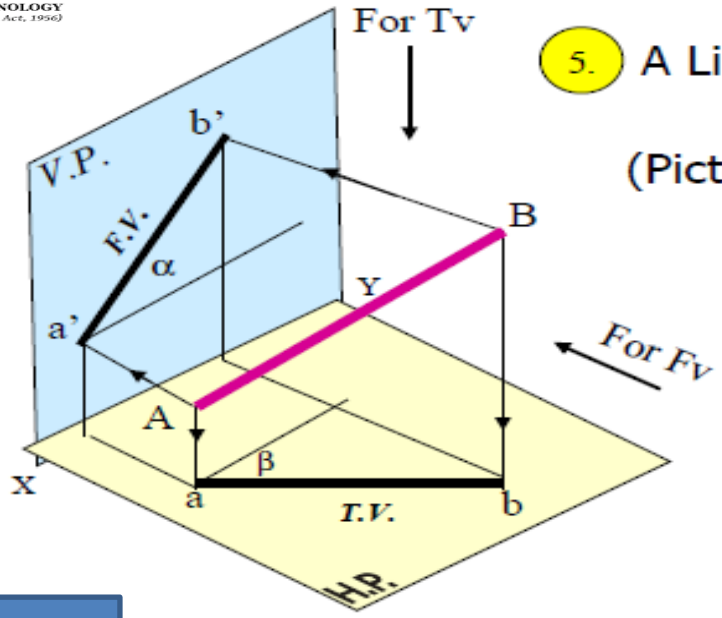
Week 4

E4- Orthographic multi-view projections (Orthographic projections of straight lines and planes inclined to both the planes)

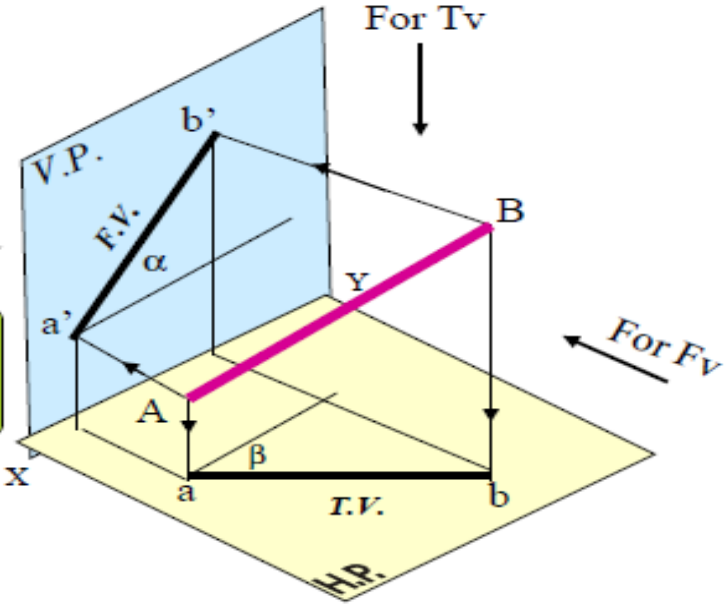
Line inclined to both planes

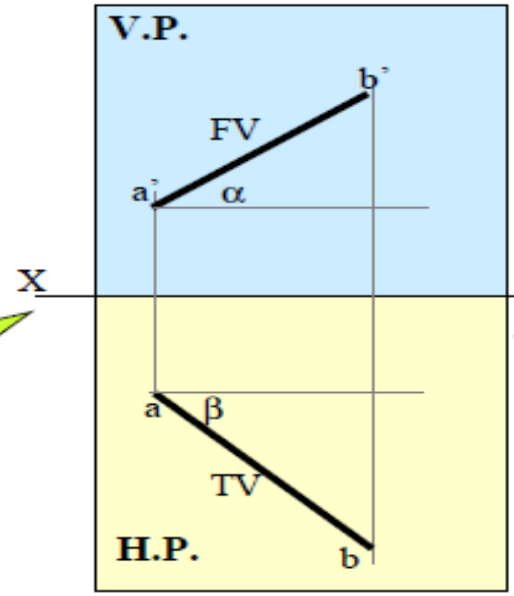
5. A Line inclined to both Hp and Vp

(Pictorial presentation)



On removal of object i.e. Line AB
Fv as a image on Vp.
Tv as a image on Hp,

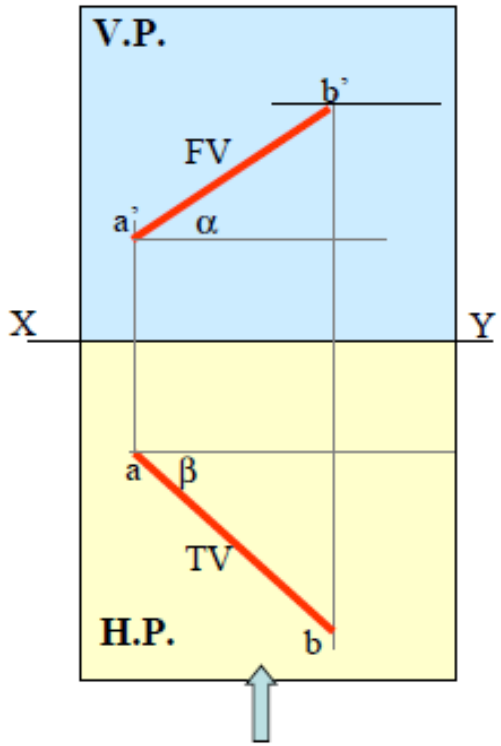




Orthographic Projections
Fv is seen on Vp clearly.
To see Tv clearly, HP is rotated 90⁰ downwards,
Hence it comes below xy.

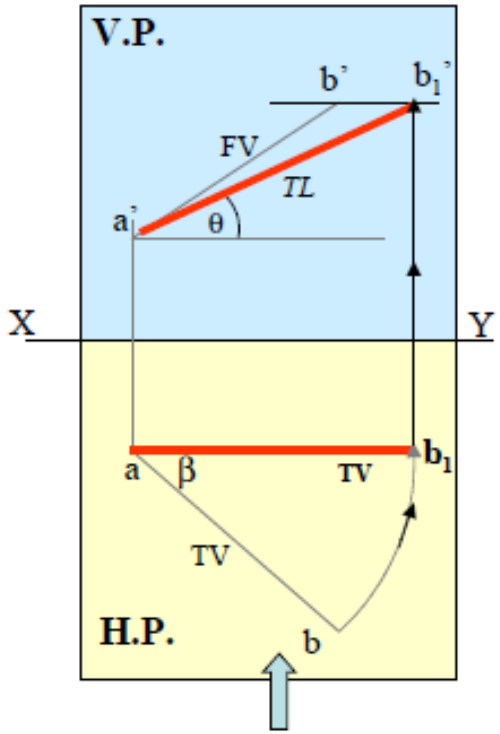
Note These Facts:-
Both Fv & Tv are inclined to xy.
(No view is parallel to xy)
Both Fv & Tv are reduced lengths.
(No view shows True Length)

Orthographic Projections
Means Fv & Tv of Line AB
are shown below,
with their apparent Inclinations
α & β



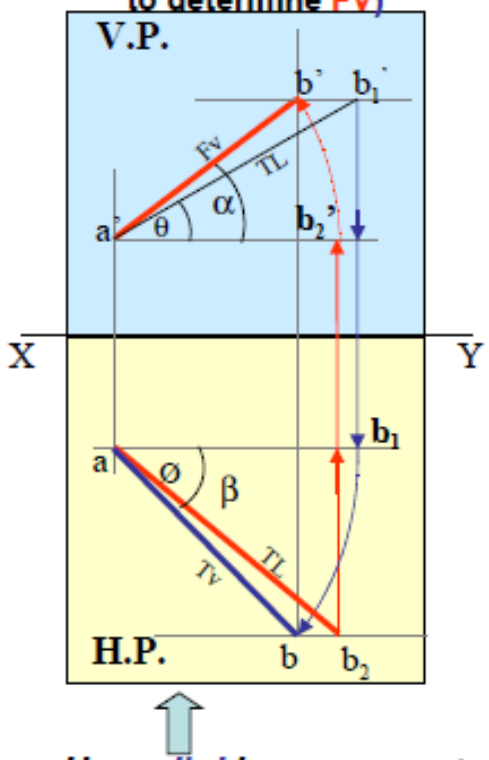
Here TV (ab) is not // to XY line
Hence it's corresponding FV
a' b' is not showing
True Length &
True Inclination with Hp.

Note the procedure
When Fv & Tv known,
How to find True Length.
(Views are rotated to determine
True Length & it's inclinations
with Hp & Vp).



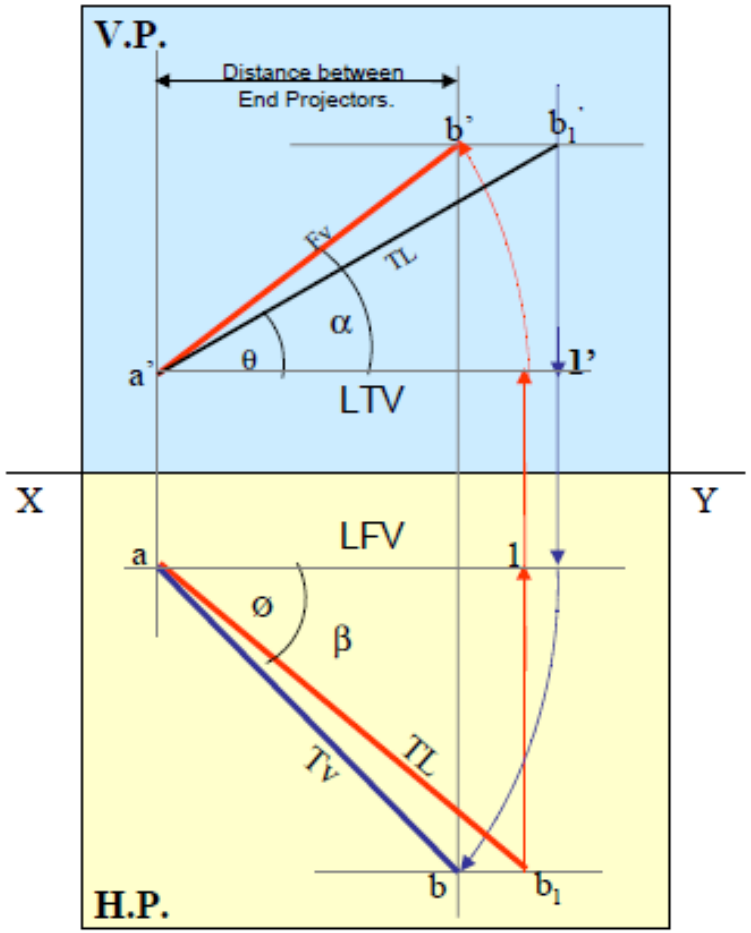
In this sketch, TV is rotated
and made // to XY line.
Hence it's corresponding
FV a' b1' Is showing
True Length
&
True Inclination with Hp.

Note the procedure
When True Length is known,
How to locate FV & TV.
(Component a'b2' of TL is drawn
which is further rotated
to determine FV)



Here a'b1' is component
of TL ab1 gives length of FV.
Hence it is brought Up to
Locus of a' and further rotated
to get point b'. a' b' will be Fv.
Similarly drawing component
of other TL(a'b1') TV can be drawn.

The most important diagram showing graphical relations among all important parameters of this topic.
Study and memorize it as a ***CIRCUIT DIAGRAM***
And use in solving various problems.



1) True Length (TL) – a' b_1' & a b
2) Angle of TL with Hp - θ
3) Angle of TL with Vp – Ø
4) Angle of FV with xy – α
5) Angle of TV with xy – β
6) LTV (length of FV) – Component **(a-1)**
7) LFV (length of TV) – Component **(a'-1')**
8) Position of A- **Distances of a & a' from xy**
9) Position of B- **Distances of b & b' from xy**
10) Distance between End Projectors

Important TEN parameters to be remembered with Notations used here onward

NOTE this

θ & α Construct with ***a'***

Ø & β Construct with ***a***

b' & b_1' on same locus.

b & b_1 on same locus.

Also Remember

True Length is never rotated. It's horizontal component is drawn & it is further rotated to locate view.

Views are always rotated, made horizontal & further extended to locate TL, θ & Ø

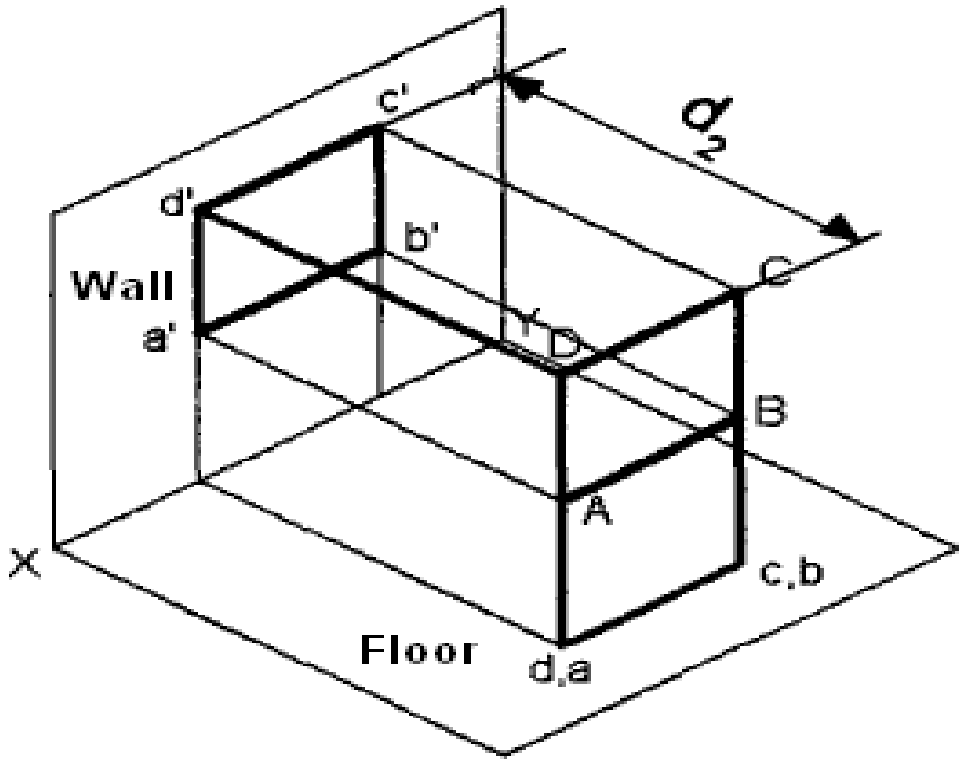
PROJECTION OF PLANES

- A plane figure has two dimensions, the length and breadth.
- It may be of any shape such as triangular, square, pentagonal, hexagonal, circular etc.

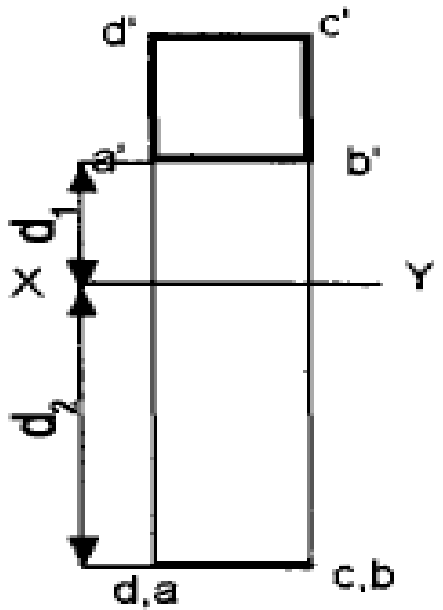
Possible orientations of the planes with respect to the wall and floor of projection are:

- Plane parallel to wall and perpendicular to the floor.
- Plane parallel to floor and perpendicular to the wall.
- Plane perpendicular to both wall and floor.
- Plane inclined to wall and perpendicular to the floor.
- Plane inclined to floor and perpendicular to the wall.
- Plane inclined to both wall and floor.

Plane parallel to wall and perpendicular to the floor

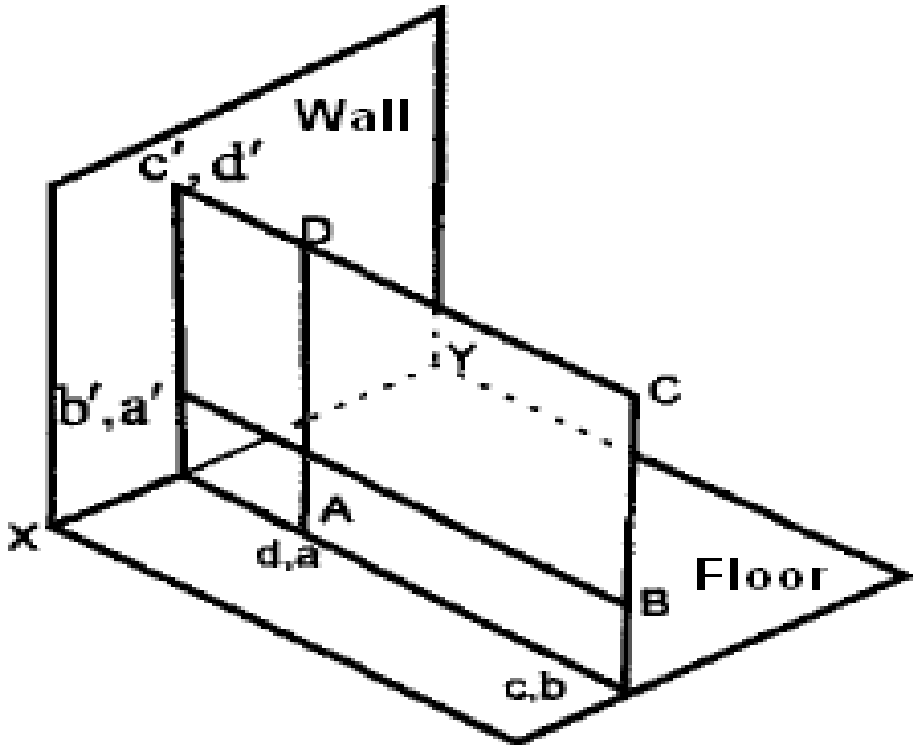


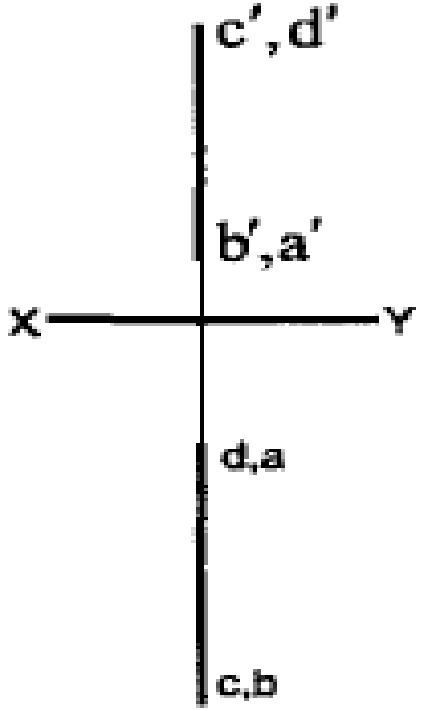
(a)



(b)

Plane perpendicular to both wall and floor





Plane inclined to floor and perpendicular to the wall.