Technical Arts 101
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Lecture – 10

I understand you have a quiz today 3 o clock, 5 1 or 2, so you are here to prepare essentially for that quiz.

Student: yes sir.

Good, so while you guys are preparing for quiz, let me drop up bomb shell to you.

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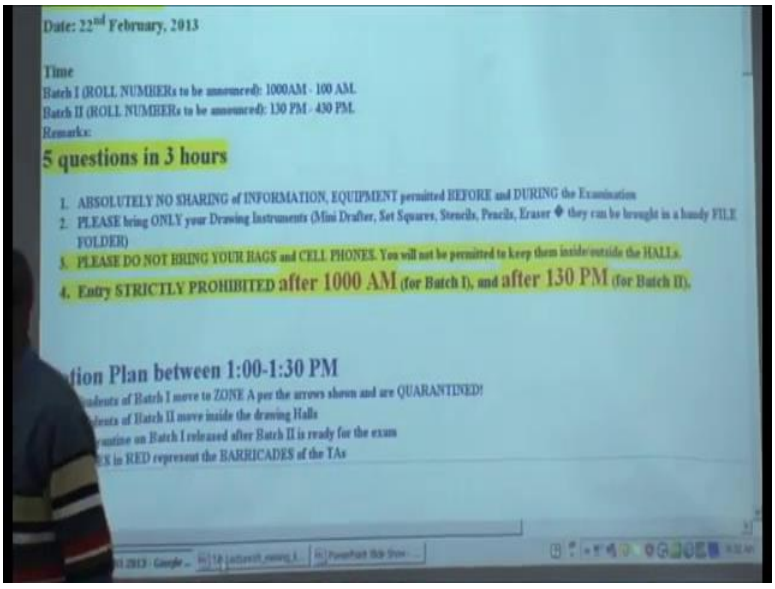

Mid sem exam details, they are now available on my website, date is going to be on the twenty second of February 2013, the exam is going to be conducted in two batches, batch 1 and batch 2. I am going to be announcing the roll number shortly. The first batch is going to be having exam from ten a m till 1 p m, the second batch from 1:30 p m till 4:30 pm.

So, these are the details, so there will be five questions that I will be asking you to answer in three hours, so far you have doing three question in three hours, in the exam there will be five questions in three hours.

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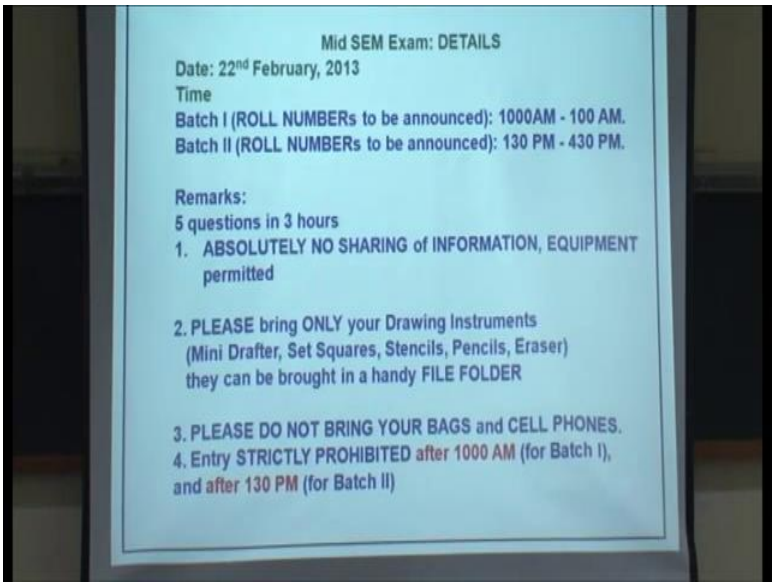

Absolutely no sharing of information before are during the exam because remember exam going to be held in two batches and most importantly equipment, so no sharing of drafters set square pencil erasers. I request you to bring only a mini drafter your drawing instruments set squares stencils pencils and eraser a piece of cloth. They can be brought in a file folder or simple polythene bag like this, keep everything except for mini drafter inside and bring this along with you. It is a very important for you guys not to bring your bags and cell phones you will not permitted to keep your bags in cell phones either outside or inside the hall.

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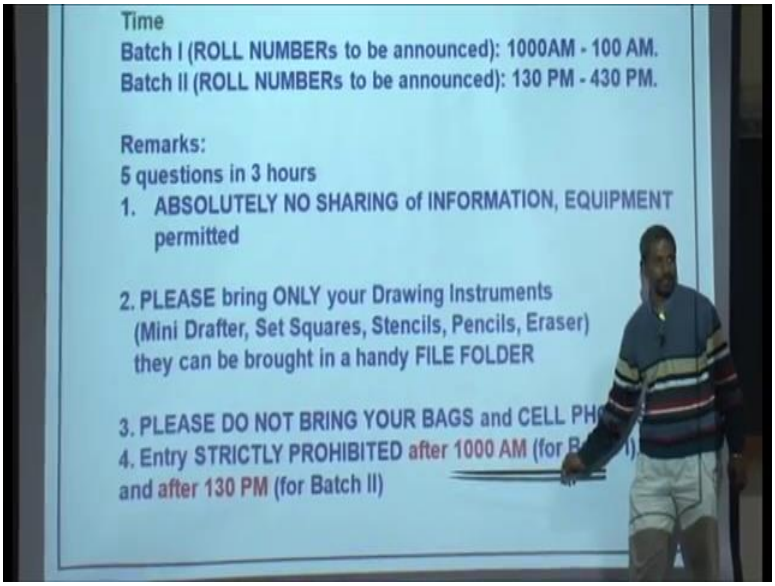

For batch one, I want everybody to be inside the drawing hall by 10 o clock sharp, 10:01 things become difficult, 10:02 things become more difficult, 10:05, 10:10, things become impossible, do not do that. Ten o clock sharp, I want everybody inside for batch two, likewise I want everybody inside the drawing hall by 1:30 pm capital S, capital H, capital A, capital R, and capital P, sharp. So, I might as well give you the questions so that you can go home prepare the sketches and come to the exam.

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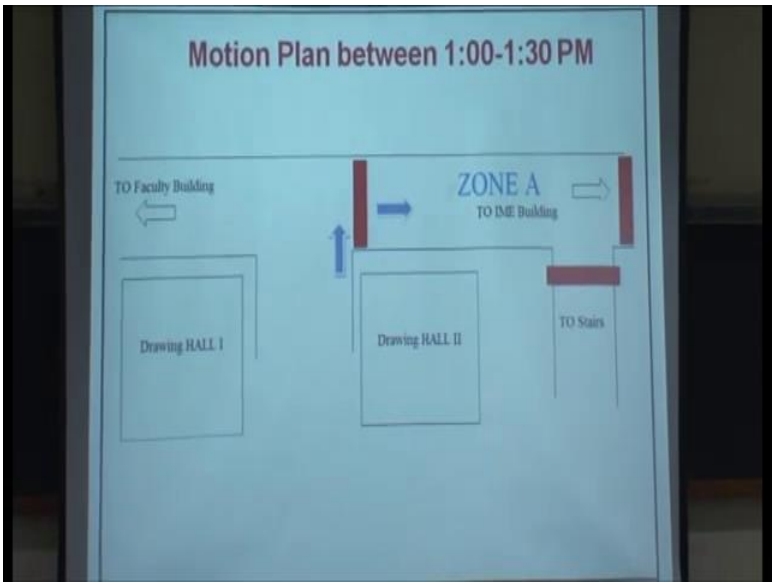

Here, is question 1 as I have in serious things will become little difficult in one and one 30, so we have a plan as there in my webpage, but I just want explain to you. So, students or peoples from batch one will be working in drawing hall 1 and 2 around one o clock. They will come out they will follow blue arrows, so this corridor that you will already know the end on left leads to the faculty building the end on right leads to the IME building. So, you guys in batch one will step out and turn your right and stay here for half an hour, you will be time go down stay there for half an hour till peoples from batch 2 occupied places in drawing hall by 1:30, you will be released batch one will be released batch two will be for the exam.

These are the barricades and will make sure that there is no mars transfer and momentum transfer, energy transfer across this barricades physics 1 or 2 no transfer information missing, so last time within missing lines, this time we have going to missing views.

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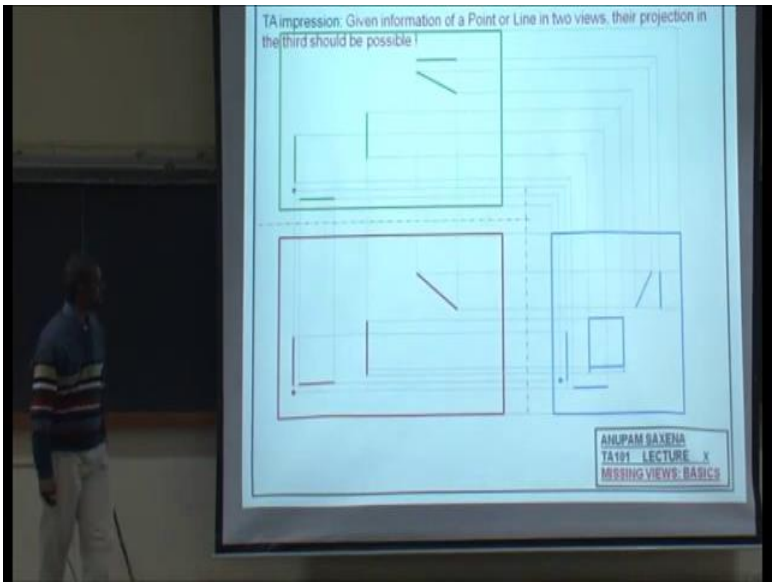

To those who are coming late, make sure you do not do that on twenty second Feb. just by 30 second or 1 minute, the doors can be closed. The main drawing hall and we cannot do much, so make sure you are in time or rather before time in case, so little basics you region in the red front view the region in the green top view the region in sky right hand side view hinge lines. If you have a point in my reviews what would its image look like in top view and the profile view? Necessarily, a line could be a point and could be a line so if the image of this point among the views is line, then if the project these things in third view you will get another line. So, these line are going to be perpendicular to the respective hinge lines, this true for all image planes or all views.

For example, if you have a point in top view and image is the vertical line in the front view if you take the images if you take image in the profile views from the vertical line. Likewise, if we have a point in the profile view in this case the right hand side view and if it is image in the front of you is the horizontal line, you take the respective projections and you will see that the image of that point in the top view is also going to be a horizontal line. If you have a slant line in the front view and if its image in the top view is a horizontal line, then what you expect a vertical line if the image of that line in red is another slant line in the top view, what you expect, slant line? So, these are certain basics that you have to keep in mind if there is a line which is vertical in top view.

If it is image is also vertical in the front view, what you expect? The image of these two lines what you expect? Take this; consider a point on the line, the image of this point is this line figure out the corresponding image over there considers this point image of this point again would be a line figure of the corresponding image over there. Do the other way round as well this point this image this point this image, what you get? You would get a rectangle. So, this is something which is important, so both the possibilities, so some of you are saying that this diagonals also possibility and this diagonals also possibility. So, what is that mean the solutions that unique the solution, that unique which makes things even more challenging when you are thinking about missing views.

I will come to that, but now let us take with angle thing, so the impression given information of a point or line in two views, their projection in the third view should be possible may be unique may not be unique depend depending on the situation. It should be possible, will try to use this information to try to construct the missing view and alongside the machine object. Just in case, let us say if I extend this line by just little bit, the image of this line is also this green line. If I take the respective projection, I will get another plane in the profile view, so uniqueness is something will have to address while constructing the missing view as well as the solid.

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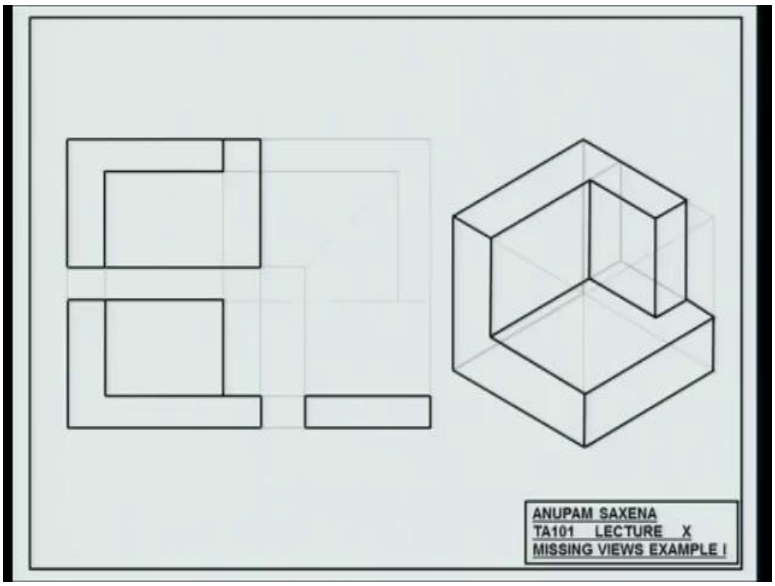

Let us take the first example two views are given the front view and the top view and when I say two views are given, I mean that nothing is missing in the two views the

entire information given what is not given its third view and we have to draw that. So, why I am going to be drawing the third view, I will also be drawing the three dimensional solid that the three views would represent. So, here we go look at this figure carefully, you can think about this figure into a bunch of lines as well and points. Likewise, you can think about divided into too much of lines as well let us focus on this line and this line.

These two lines would represent what assuming we are thinking about diagonal lines as of now that would represent the plane and that would represent the plane on the backside of the objects, so this was the planes. So, if you are with me say yes if you are not with me raise your hand and feel free to ask question, how about this line and this line? You will also get a plane, now what have done is I have drawn the extended plane, so I have assumed that this line extends after this point over here. Just you get the solid and perceptive drawn this plane so that the plane extends to this edge, how about this vertical line here and this vertical line here.

I get this plane and then this edge is something that I have seen the top view from here to here this edge is something I have also seen in the top view for here to here, this bottom edge the same thing I see this in top view and also I see a part of this in the front view. This vertical edge I have seen in the front view right top view right vertical right vertical edge, front view the vertical edge on the right top view, this again front view at this point you have some information as to how the solve it might look like. Use your judgment and try to finish, this is how the solid might look like once you know how the solid looks like the front view you get the front view.

When you look at the object along this direction get top view when you look at the object from this direction and the right hand side view this from this direction, you are ready if you are convinced that this object. If you are convinced that the front view and the top view show on correspond to the object that you have drawn. You are ready to draw even side view use projection you would see this phase you would see this face you would see this face. Then, you would see this face things can get tricky things can get tricky, so you will have to be a little careful.

Another way to think about this start with the three dimension block, start with the three dimension block assume that is solid and depending on what your views depicts start

cutting different parts from that block that is the other way. So, assume that you have a clay wax or box made a wax start cutting different blocks different parts from that till you get your top view right your front view. Once you are convinced, then you are ready to draw the profile view of the third missing. So, its experience essentially there is no method that is the right method, so it is experience that is going to help you draw the object.

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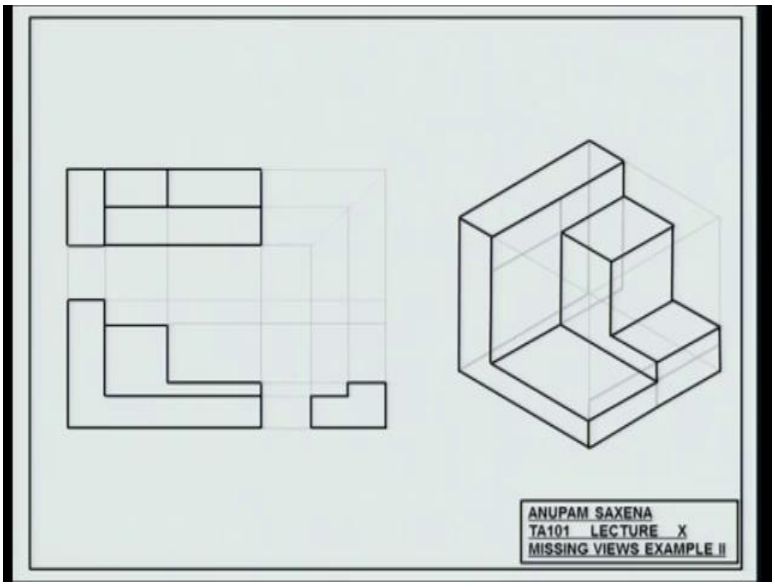

Example two, the front view given the top view given use a fact that the image of two vertical lines in the two views will be a plane in the third view use corresponding to this line and this line. You will get plane at the back right when you say yes, corresponding to this line how many lines you see here two is it yeah one two how many things you expect how many things you expect. So, the image of this line is this guy over here the image of this lines also this guy over here and by the way this is also discretized into two vertical lines, so how many planes you expect? For now let us say they are going to be four planes the this the plane that would corresponds to this line here and this line here second plane corresponding to this line and this line.

The third one corresponding to this and this and the fourth one corresponding to this line and this line what would this plane corresponds to? This and this how planes to expect here and here four these planes, yes do I see this line in another views up top view do I see this line, do I see this line top front rather both do I see this line? Do I see this?

Finish your object and now try to sketch or try outline the object in three dimensions and your object will probably work like this yes simple is it.

Student: yes sir.

Once have this object, you are ready to draw the missing view which would look some like this good, so possible lets think about loops a loop is, what is a loop? You know what that is let us think about loop how many loops are there in the front view? How many loops are there in the front view? We will actually mathematically here three, but for now we will assume that these loops are not in each other are one loop is not enclose in other loop.

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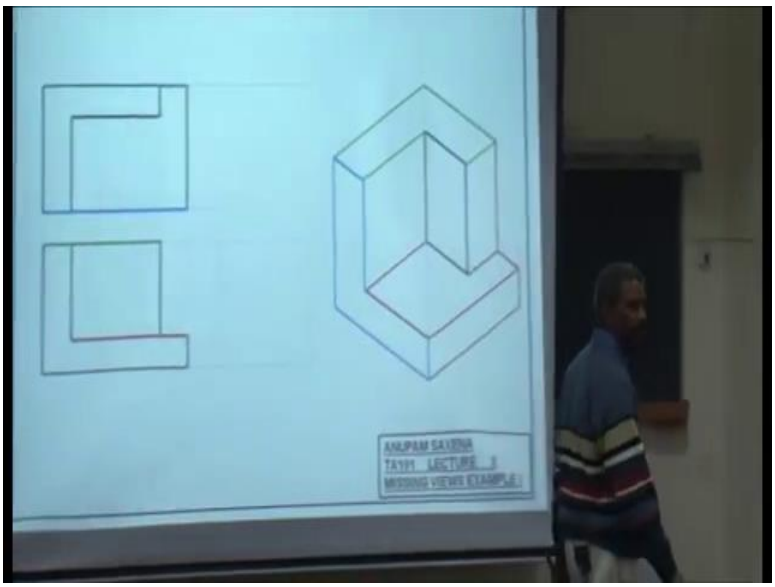

So, this is loop that you see in the top view this guy here this is the loop that you see again in top view this the loop the l loop that you see in the front view. Then, you see a rectangular loop again in the view and now the problem is just to place t is loops appropriately in 3 D had you do that let us see.

So, this for the green loop is this were the image of the green loop is, so the green loop is here on the top view the image of this is at the top in the front view. So, this loop states here the red loop this loop the image of this is over here in the front view right, so this loop what happening to it will go down, the image of the sky blue loop in the front loop is at the bottom in the top view. This the your red loop, what is the image of that in the

front view this line here, there is a difference in height between the green loop and the red loops. The green loop is staying at the top the red loop is going to be push down right, this is your sky blue loop.

The image of that is here in the top view, so this sky loop is stay there how about this loop will we stay there will get pushed along which direction, so what we have done instead? So, these loops they are represent different phases of a three dimensional object so what you have done is you have determined the placements the relative placements in three dimensions. Once you have done that all need to do is draw the missing lines right simple again, once you know the object you know the missing line, how about this how many loops you seen in the front view.

Student: two

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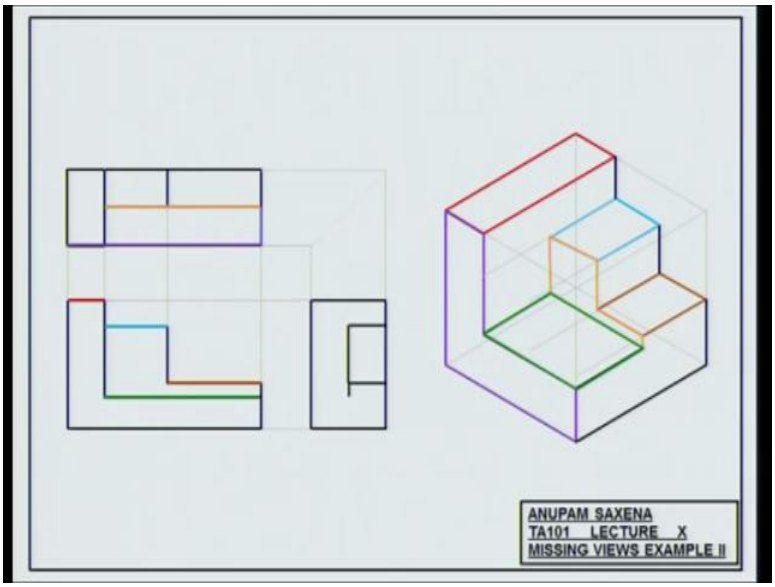

Two, but then is one in light brown, so these are two loops that you see in the front view correspondingly in three dimension there were the placed in the top view how many loops to see 1, 2, 3, 4 need to play with them. You need to push them back in forth down and up this is where your red loop is the stage at the top your sky blue loop this one gets pushed down by this height. The brown loop gets pushed for the down the purple loop says where it is the white brown loop gets pushed along this direction. Once you have placed these loops appropriately fill out the rest of the lines the green loop, the green

loop comes down. Now, fill the rest of the lines complete the rest of the lines once you know the object, you know it is three dimensional you know it is third view.

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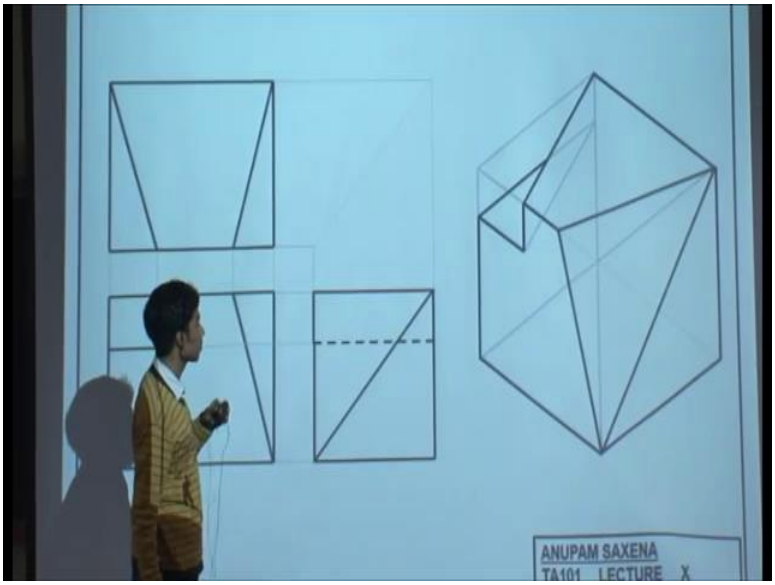

Given two views, this is a little tricky and challenging would the loop method work here any have lets GPO convention starts. This plane corresponds to which two lines this line here and this line here and this plane corresponds to this line entire line and this line at the back. Likewise, the plane here other front corresponds to this line this in parallel line and this time at the back, likewise the plane here on the front corresponds to these two lines with me with me good. So, this is your plane of front view this is your plane of top view of course and this is your plane of the profile view in the front view you would possibly see a line here a line here, essentially this phase here.

Then, you will see some like this right this is the tricky part this is something that you will probably need to guess you will problem need to guess. If you look at the solid from here you will see this line, you will see this line you will see this line. You will see this line, but if you look at the solid from the top you will see this triangular edge taken out from the block corresponding to which you have this triangular feature here. Now, how about these two triangles, it is a plane it is a slanted plane are you sure?

Student: yes sir.

Student: no sir.

Well, if it is a several planes if there are like two planes then they have to be a line of discontinuity between those planes. So, you are saying is these two triangle will constitute two planes have try it out, try it out, but let me go with your option first a single plane a slanted plane. So, what are the vertices of that plane will be somewhere here the second vertex will be here and the third vertex will be here correspondingly the second vertex will be here the third vertex will be here. Now, imagine that you are working with this, imagine that you have drawn the solid, now try to verify if you get the projections in the front view and the top view right if you do the solid was which line, this line here.

So, remember and remember this golden rule that if you are getting two planes or if you are getting a single plane with four points on the plane make sure that all four points are could planer. Otherwise, you do not doing anything right once you get the sense of how the object is going to look like in three dimensions work out the outlines. Once you know what the object looks like work out the third missing view, let me tell you let me warn you rather that this is not at all trigger for certain cases for certain cases straight forward, but for many other cases it is not triggered. You have to give you seek your half time, let me let me, but what the corresponding line appear over here, yeah absolutely you are most welcome.

I think join these two, so this line, how about the hidden lines, then how about the hidden lines? So, the middle lines would be two line are you sure try out, so there could be multiple solutions so try it out and do verify if the loop method would work in this case.

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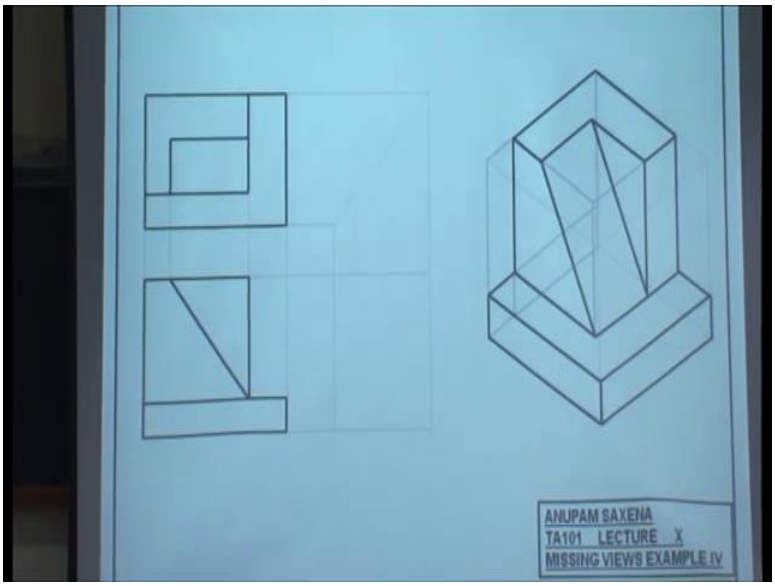

Another example, so this time I wants speak just follow and stop me wherever you have doubts are you with me.

Student: yes sir.

I will talk about this red lines later for now, let me finish up a solid with those deadline should be there dot on the money, again coming up with the third view is not so difficult how are the loop method.

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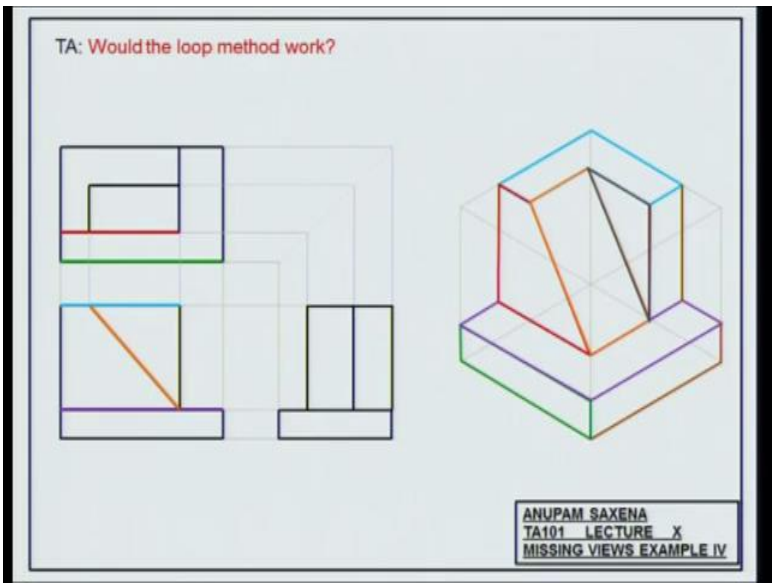

You see the First loop here trapezium second loop rectangle third loop at the top fourth loop again at the top and then you have this rectangular loop at the top and you have this triangular loop on the front. In the front, the purple loop has to go where here the red loop has to go where the green loop stay there the brown loop would it stay like that would it change in shape like the sky blue loop stays there the black loop here.

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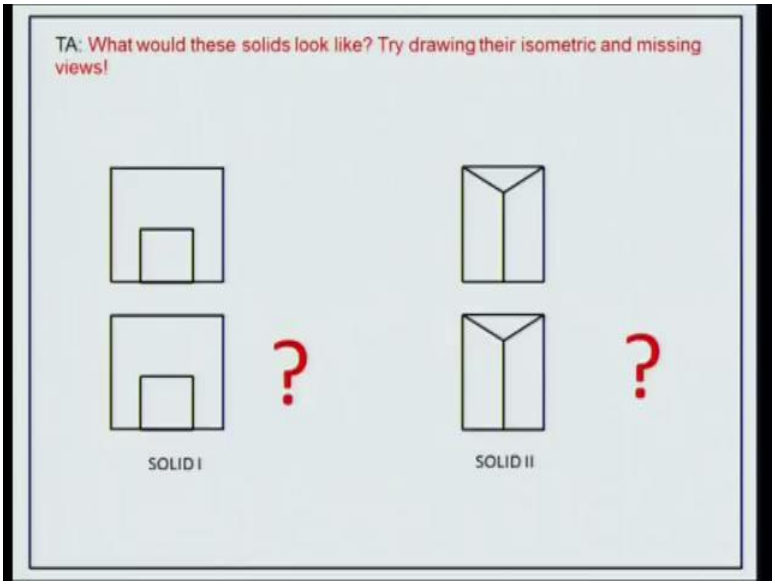

Top view of solid two they are identical to each other and the other time it does not matter if we using first angle scheme or third angle scheme since they are identical to each other. In both cases, in both cases try to find how the respective solid will look like number one and once you do that try to find the missing profile view.