Indian Institute of Technology Kanpur
National Programme on Technology Enhanced Learning (NPTEL)
Course Title
Engineering Graphics

Lecture – 01
Course objective, Lettering and Numbering

by
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So TA 101.

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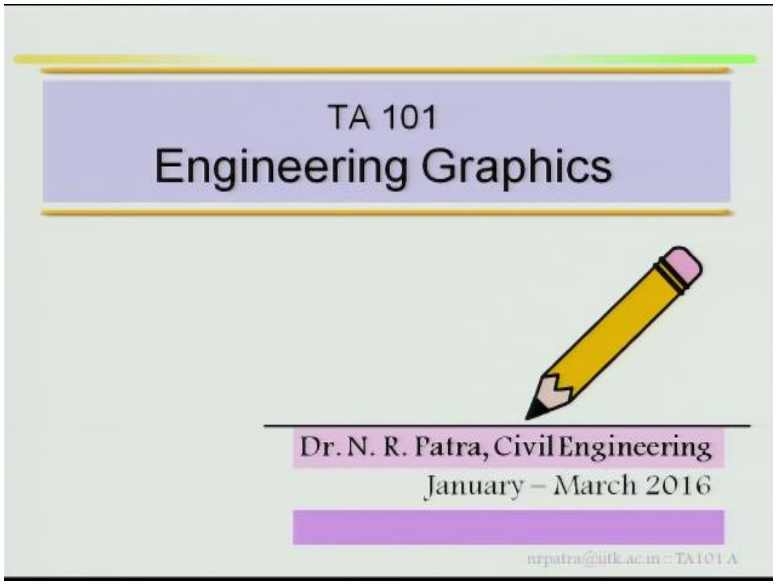

Engineering Graphics, so.

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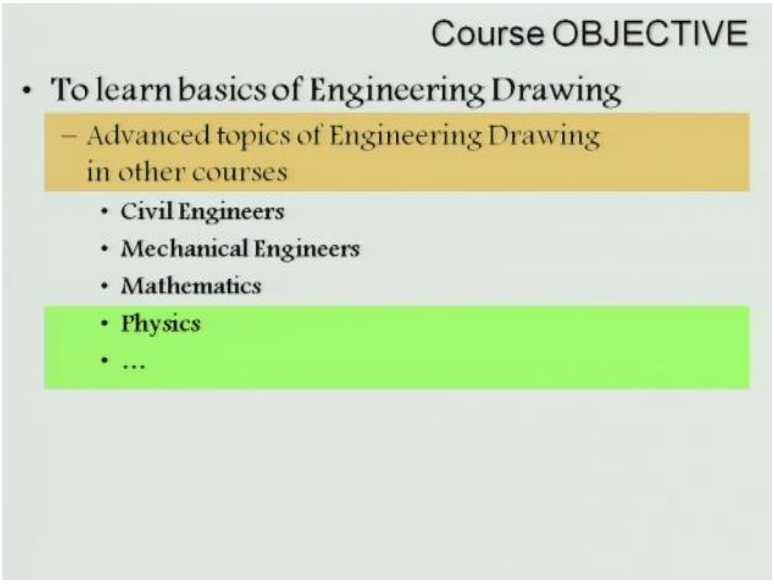

First this basic outlines of this course, the objective that this course to law on basic engineering drawings, advanced topics of engineering drawings in other courses, for example civil engineering, mechanical engineering, mathematics, physics, almost all branches of engineering they need engineering drawings or engineering graphics course.

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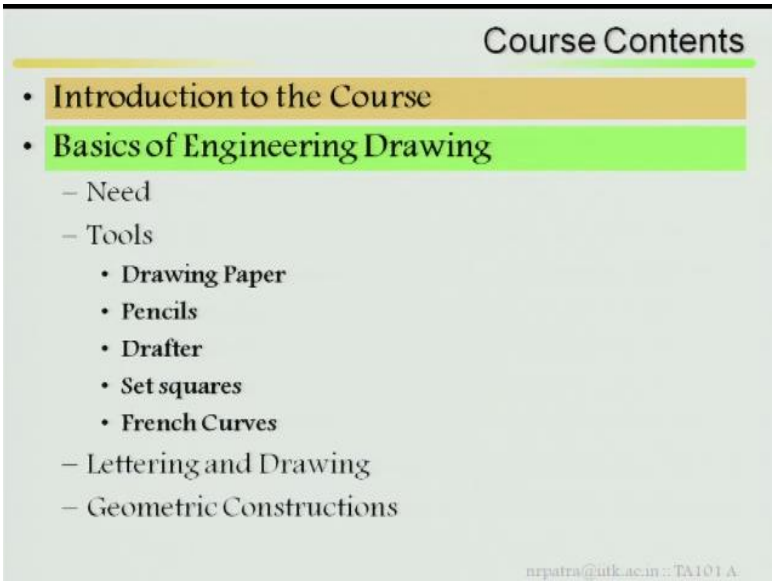

So basic course content, so basic engineering drawing what they need and different tools, drawing paper, pencil, and drafter, set squares, French curves, then lettering and drawing, geometric constructions, geometry constructions means parabola, ellipse, curves, different geometric constructions.

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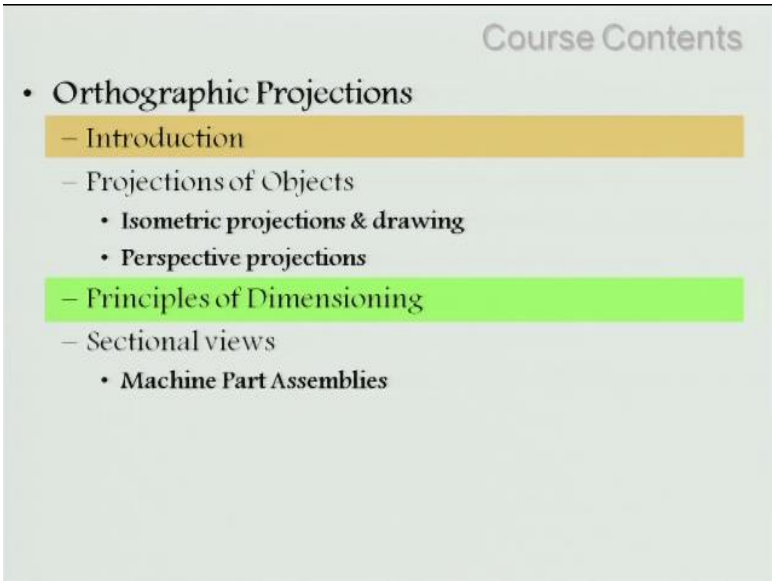

Then first partition orthographic projections, in this orthographic projections we will cover introductions, projections of objects, isometric projections and drawings, prospective projections, then principles of dimensioning, how to do the dimensioning of any object, sectional views, machine part assemblies.

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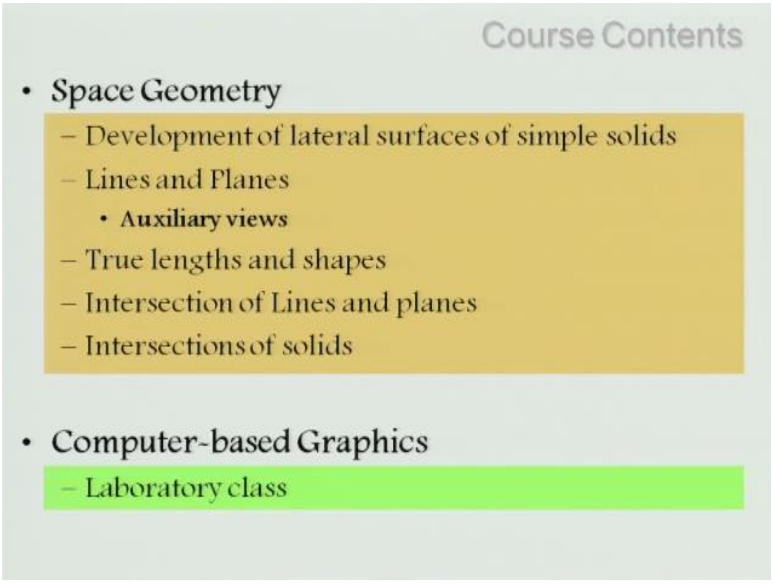

Next part of your course content, space geometry, in space geometry development of lateral surfaces of simple solids, lines and planes, auxiliary views, true lengths and shapes, intersection of lines and planes, intersection of solids, last one is your computer based graphics or laboratory class.

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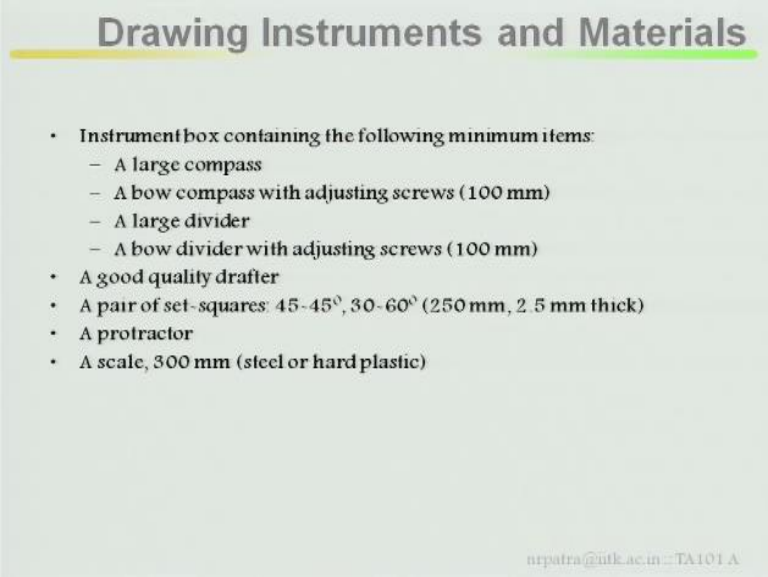

Now drawing instruments and materials required in this course, instrument box containing the following minimum items, a large compass and a bow compass, large divider, bow divider and good quality drafter, a pair of set squares, protractors, scale

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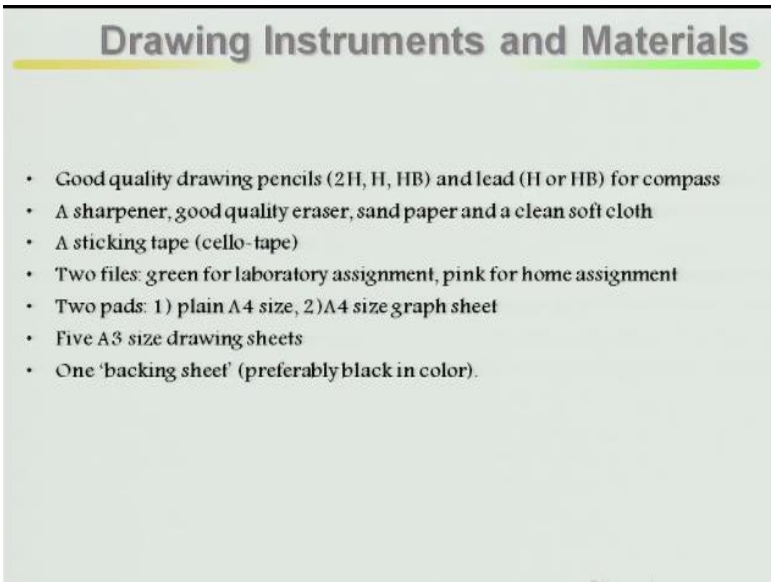

Good quality drawing pencils, generally you should have three sets of pencils, 2H, H, HB and leads for H or HB sharpeners, sticking tapes, two files green for laboratory assignment, pink for home assignment, two parts planeA4 size, and second is your A4 size graph sheets, A3 drawing sheets, and one black sheets.

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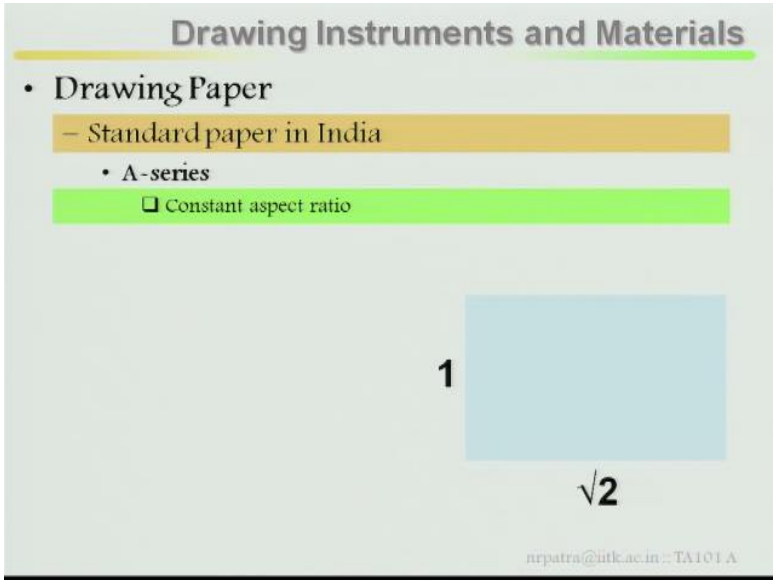

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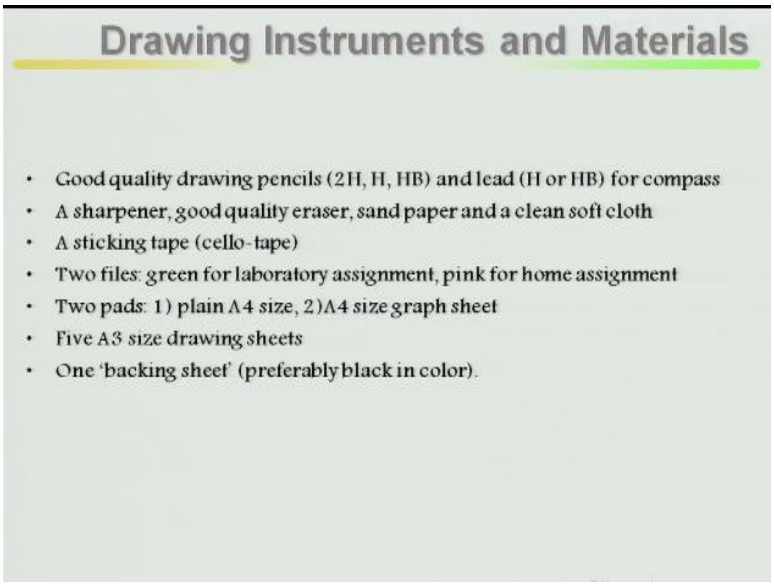

Preferably in a black in color.

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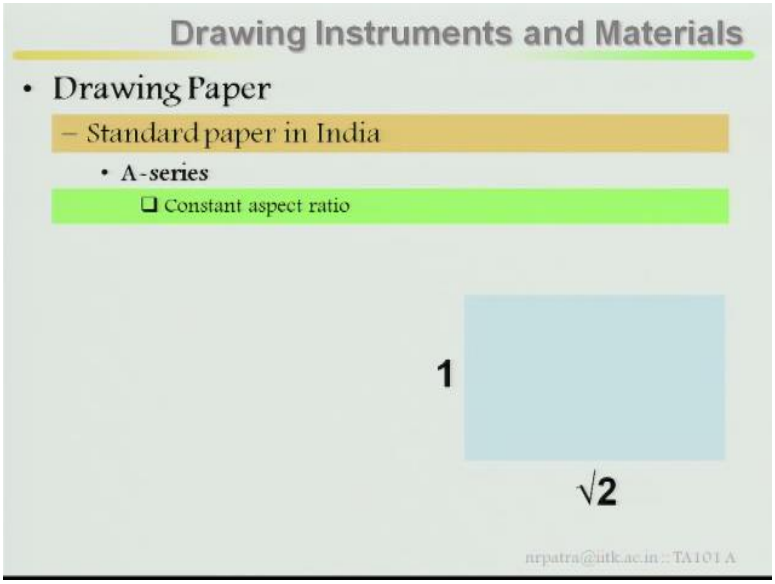

Now what are the sizes of your drawing papers? Standard papers in India generally it is called A series 1: √2 size.

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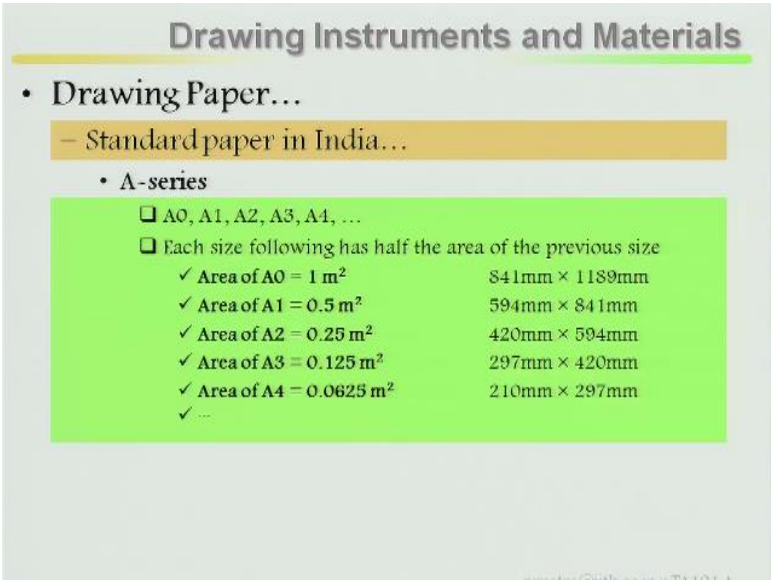

Different sizes A0, A1, A2, A3, as well as A4 size now.

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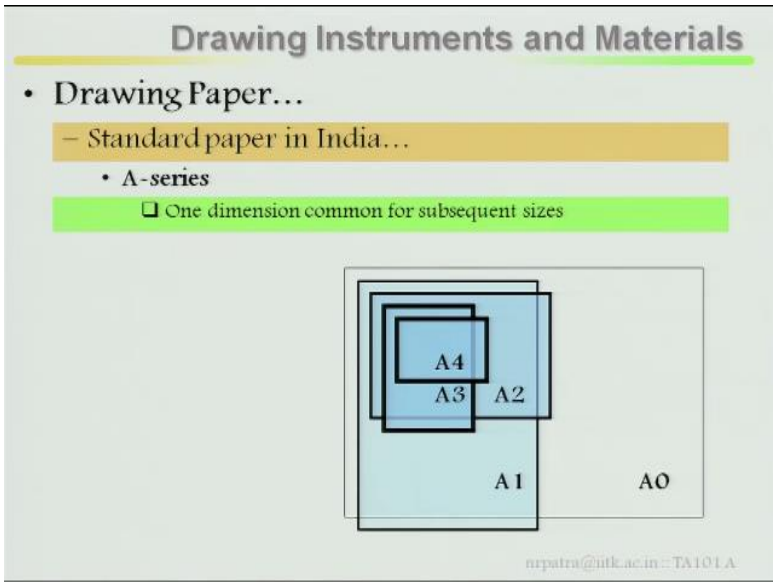

If you come to your drawings.

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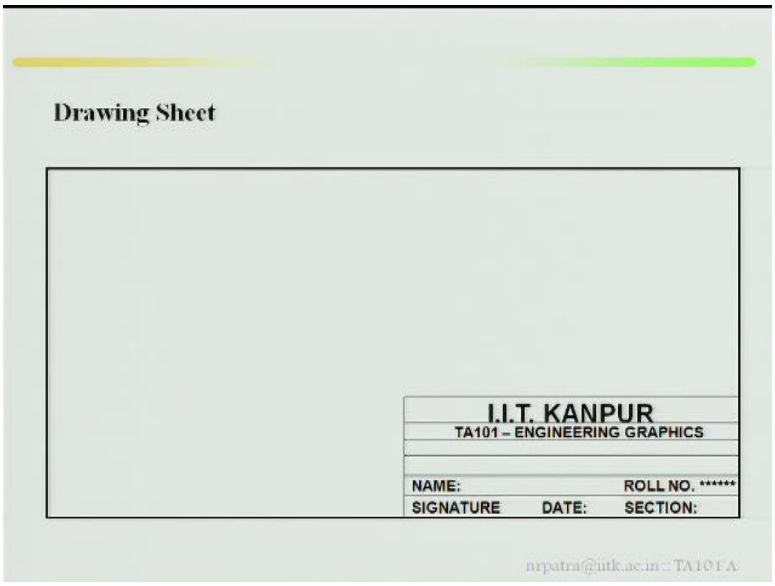

This is a typical A3 drawing sheet in typical A3 drawing sheet if you looked at you looked at your typical drawing A3 then there is your title box, this is called your title box if you look at this title box generally you write it your Institute, then your course TA10, name, signature, date, section, and roll number.

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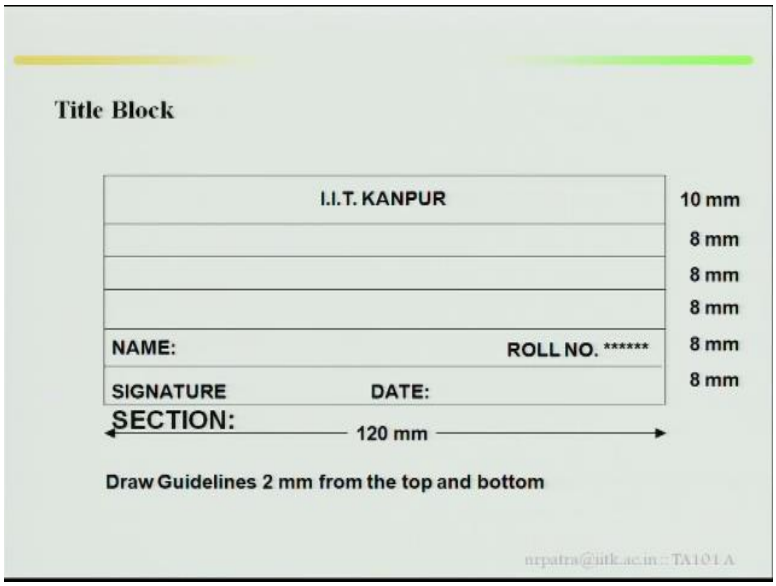

The title block has dimensions complete dimensions first one is your 10 mm, 10mm, 8mm, 8mm, 8mm, 8mm, and 8mm, size is your 120mm but base width is your 120mm, draw guidelines 2mm from top and bottom, guidelines would be 2mm from top and bottom, so how it looks like.

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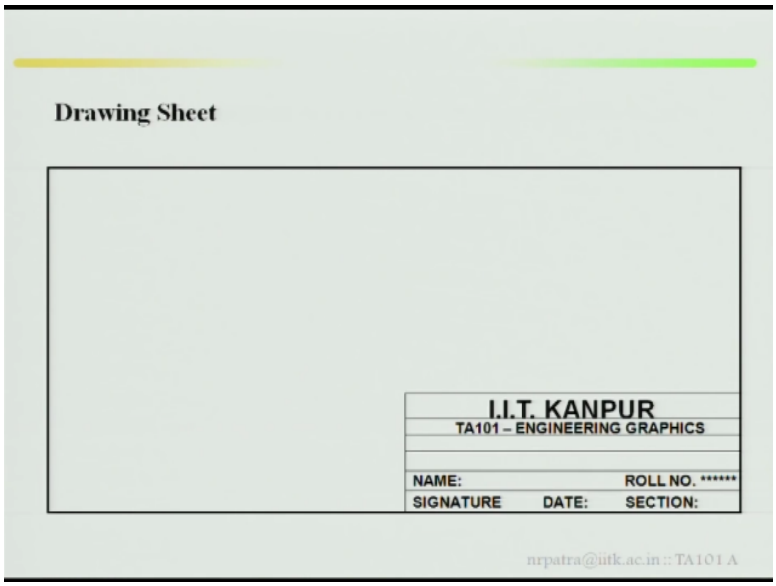

In a drawing sheet once you come to the class, first you prepare your title box, write name, roll number and sign it, put your signature, then write what is your topic, what topic you are doing suppose you are doing lettering you write it lettering, suppose you are doing orthographic projections you write it orthographic projections.

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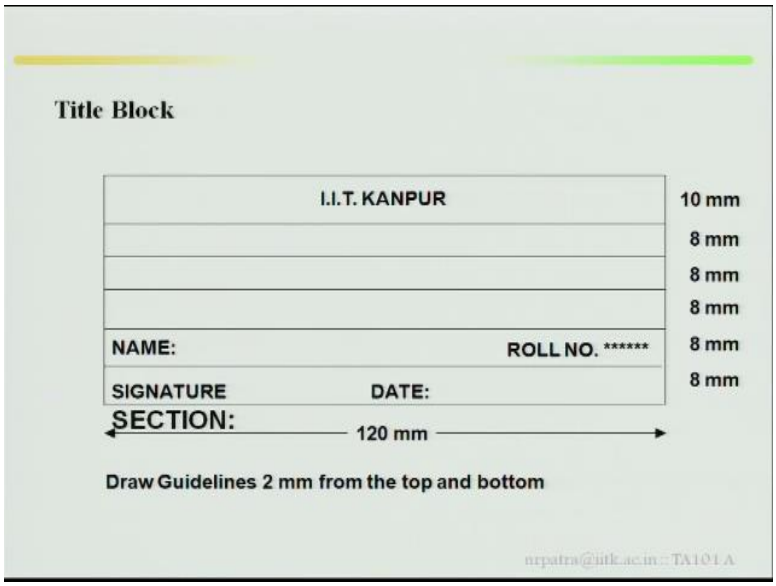

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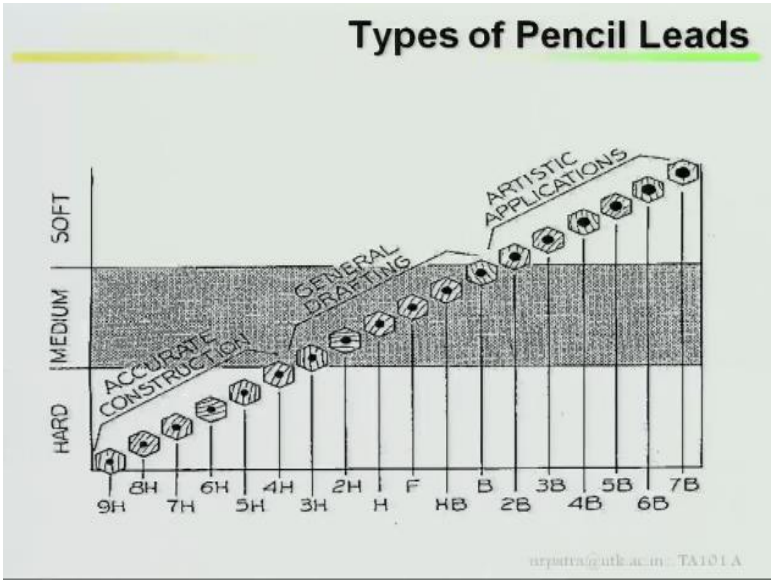

Then types of pencil leads, if you look at here different types of pencil leads are there so different types of pencil leads if I classify into it there is from 9H TO 7B so first one is your per between 9H TO 4H this is your accurate constructions it comes under hard, then generally for drawing purpose this will be varying form H, 2H and HB generally these are all your general drafting or general drawing it comes under your medium, then 2B, 3B, 4B, 5B, 6B, 7B these are all artistic applications these are called as soft pencil leads.

So you have to H, 2H as well as HB pencils to bring for your drawing class.

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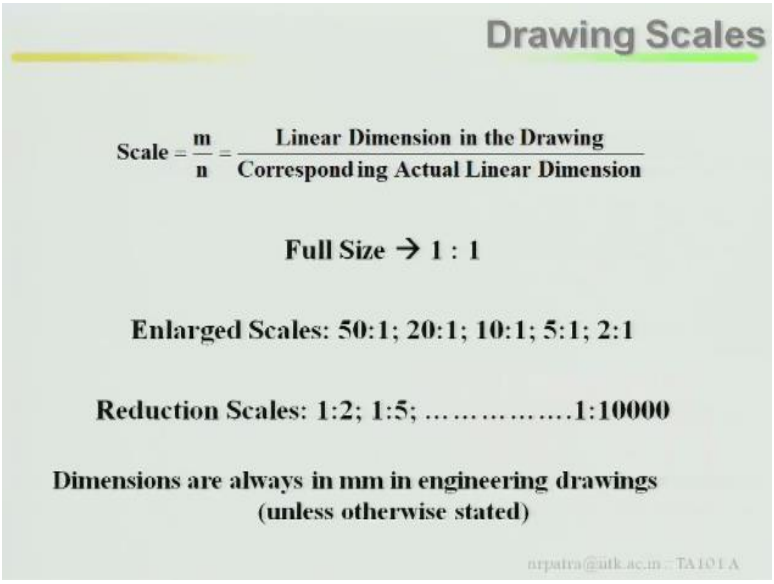

Then another part is your scale, so before starting your drawing you have to go for a scale, generally scale is your m by n.

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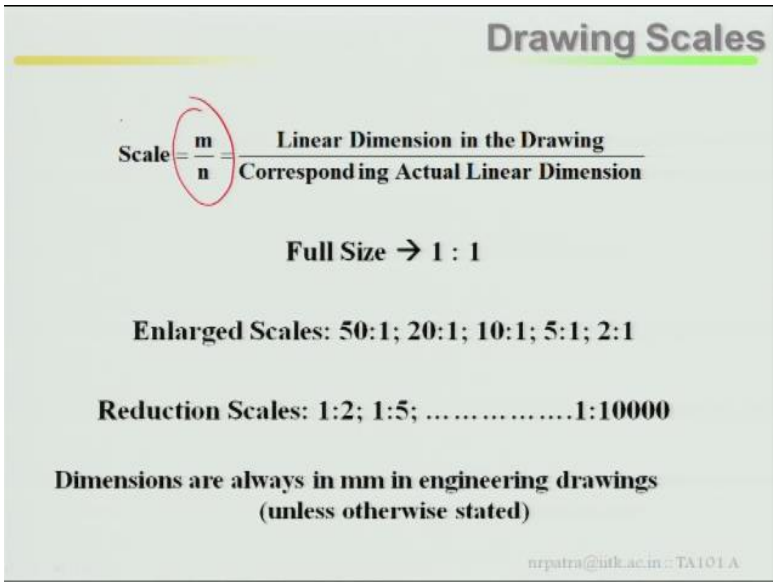

m by n is your linear dimensions in the drawing and corresponding actual linear dimension, so pool size is 1: 1 if I want to enlarge. Enlarge means actual dimension is suppose x by x I want to show it in enlarged view in a drawing generally you have to write it 50 : 1, 20 : 1, 10 : 1, 5 : 1 and 2:1, reduction scales generally we write it reverse 1:2, 1:5, 1:10000 or 1:100. Generally in drawings dimensions are always in mm millimeters unless otherwise it is not specifies you assume whenever there is a course since you assume this dimensions are in mm.

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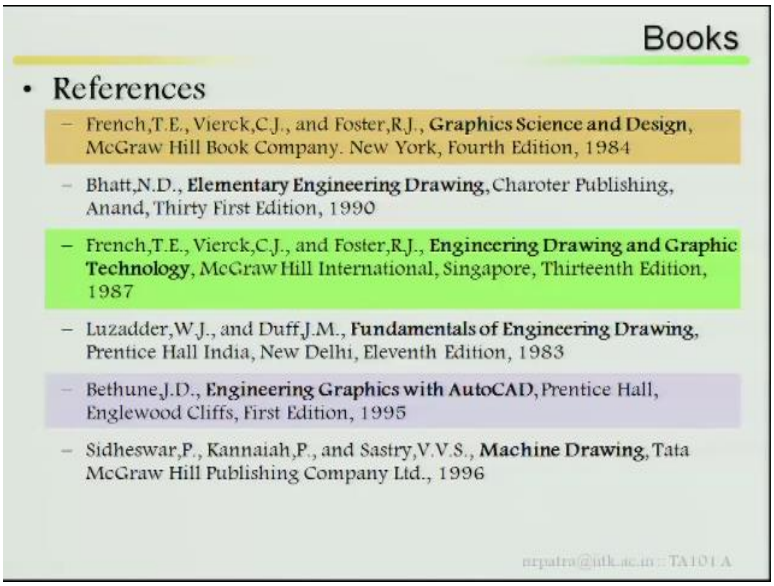

Books, so reference books, French book graphic science and design, 1984 then Bhatt N.D Bhatt books are in the vogue in India is also there you can collect it, French and Foster a revised edition new edition 1987 also available, these are the book references, you can follow these book generally primarily I am teaching from this book French and Foster in 1987 revised thirteen editions 1987, other books it can be used as a reference book you can follow it up.

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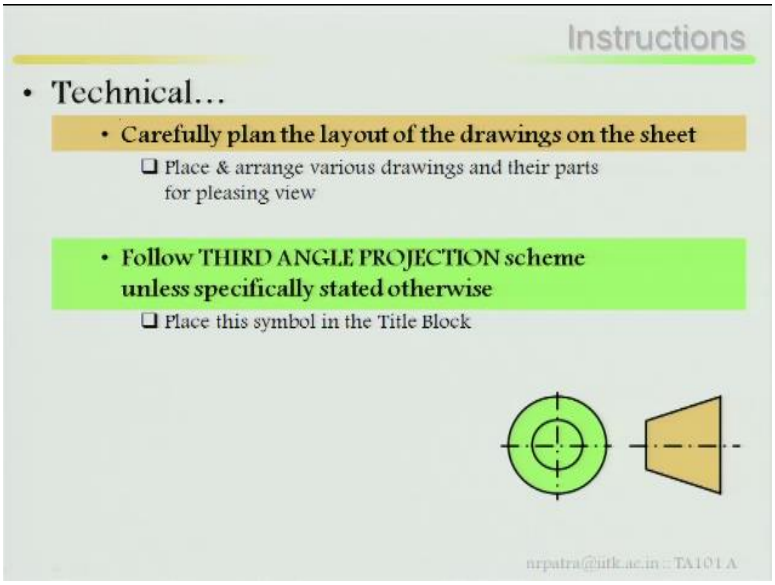

So technical, before coming to drawing class carefully plan the layout, once you are in drawing class carefully plan your layout of the drawing on the seat, place and arrange various drawings and their parts, generally in drawings we follow third angle projections scheme unless otherwise it is not specified, later on I will explain what is.

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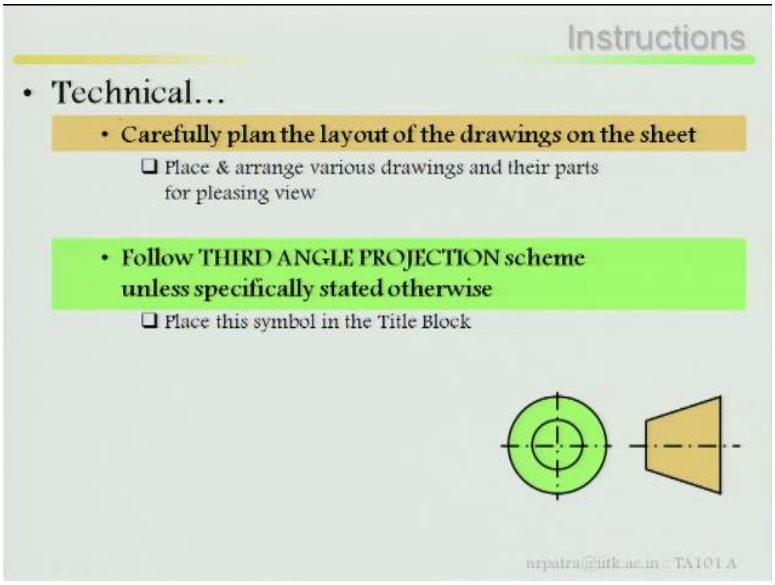

First angle, what is third angle projections, in third angle projections unless otherwise it is not specified you generally follow third angle projections.

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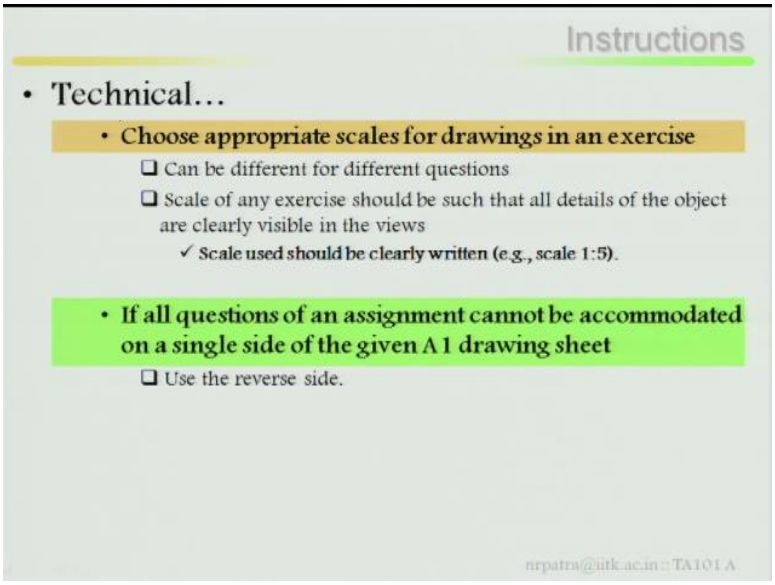

Then can be different choose appropriate scale for drawing in an exercise as I said earlier.

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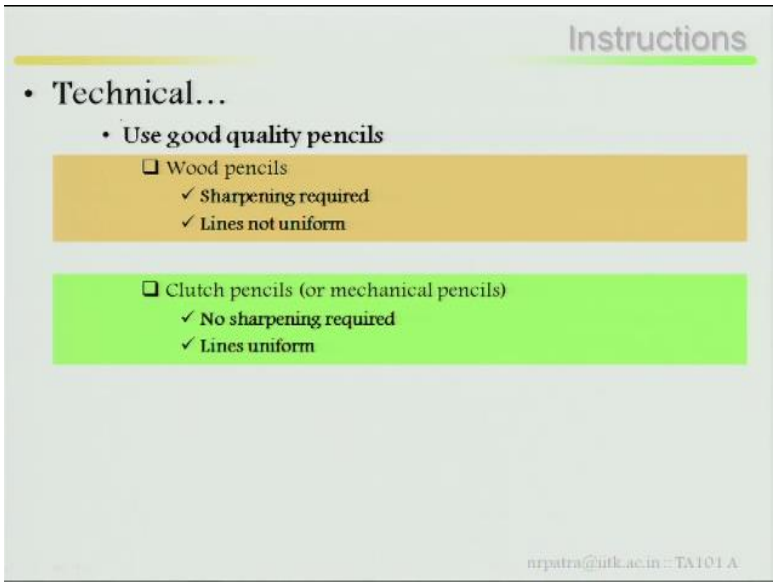

Then use good quality of pencils.

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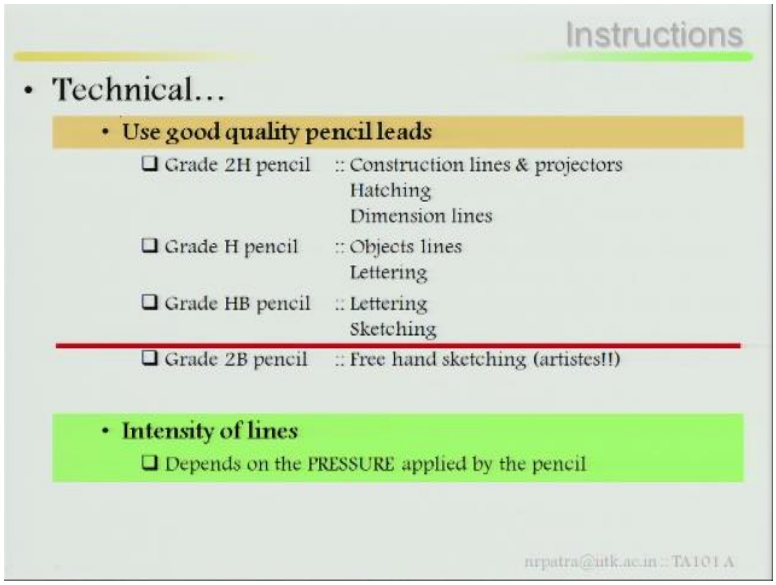

Then these are the pencils, grade 2 expenses as I said earlier, constructions lines and projectors, hatching dimensions lines, generally it has been done by means of your 2H pencils, then grade H pencils or H pencils particularly for objects lines, lettering, HB pencils lettering and sketching, grade 2B pencils generally free hand sketching or artistics, this is all about introductions of your engineering graphics or TA101 course.

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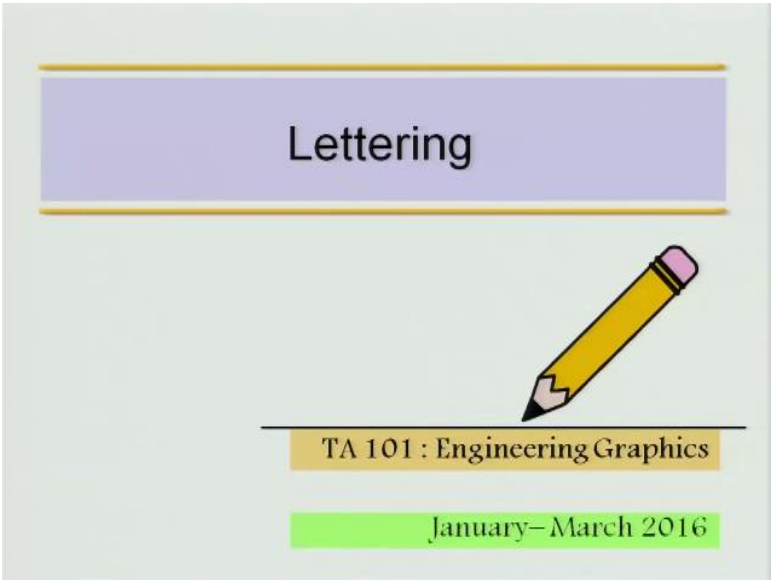

Then first part of this course is lettering, generally in engineering graphics in general normal life you are writing lettering, you are writing your name, you are signing your writing letters, while drafting also drafting essay or drafting a letter but here in engineering lettering is, lettering has to be followed proper procedure, if I look at the pencil.

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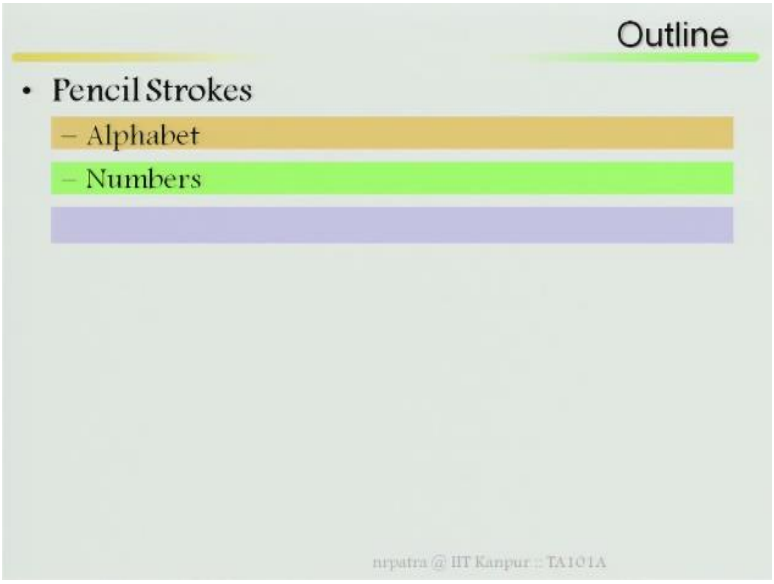

Strokes one is alphabets ABCD, other is your numbers, numbers is your 1, 2, 3, 4, 5, 6.

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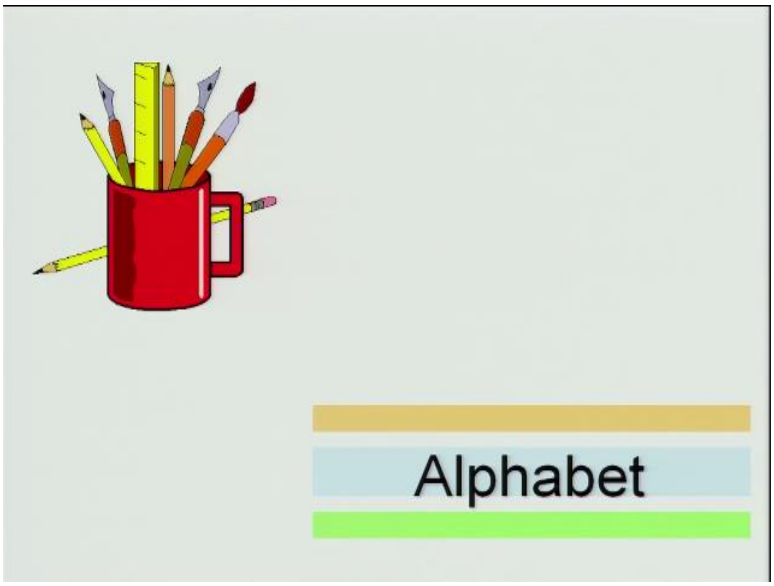

Now start with your alphabets.

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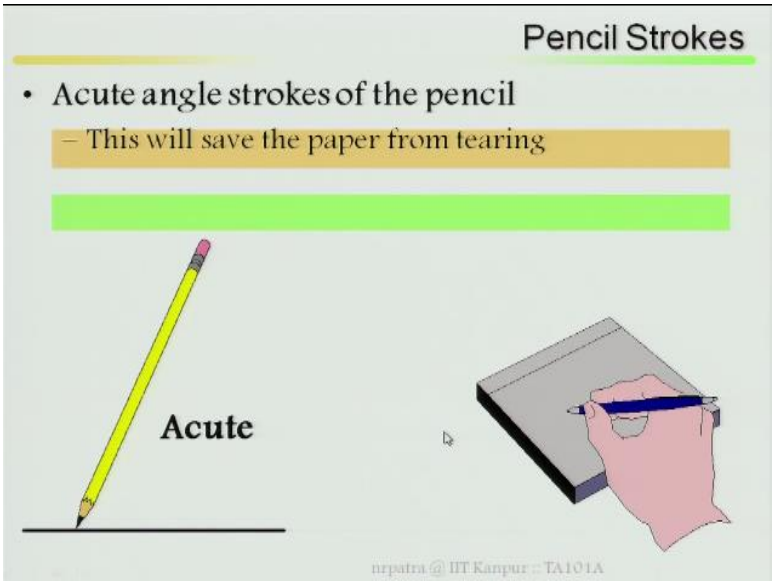

Look at this how the pencils you can put it, acute angle strokes of the pencils, once you keep if it is your drawing sheets, drawing paper, you put your pencils in acute angle, this will save the paper from theory, suppose if I have put my pencil like this.

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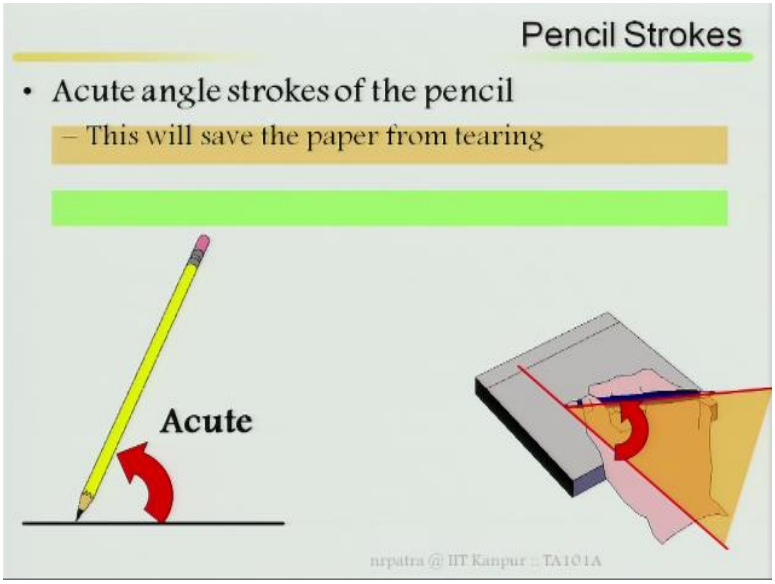

Then it may possible that it may tear the drawing paper, the moment you put it like this so this is acute angle, so in this way you can draw smoothly.

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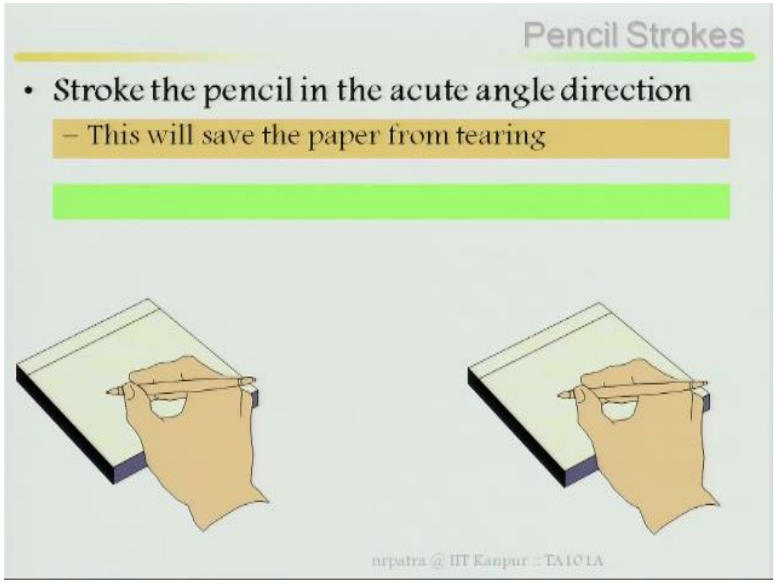

Stroke the pencils in the acute angle directions as I said.

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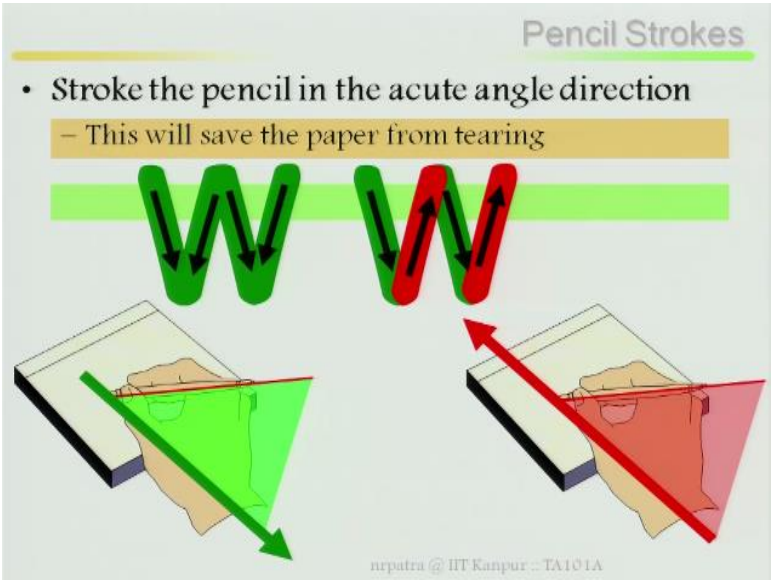

Look which is right and which is wrong, if I want to write it W how I am going to write it? There are two examples if you want to write a W how you are going to, look at the strokes.

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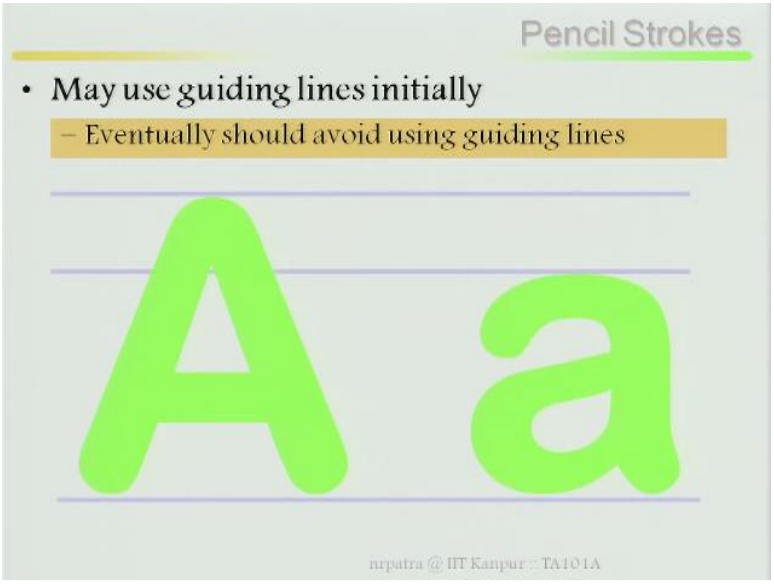

Look at the strokes.

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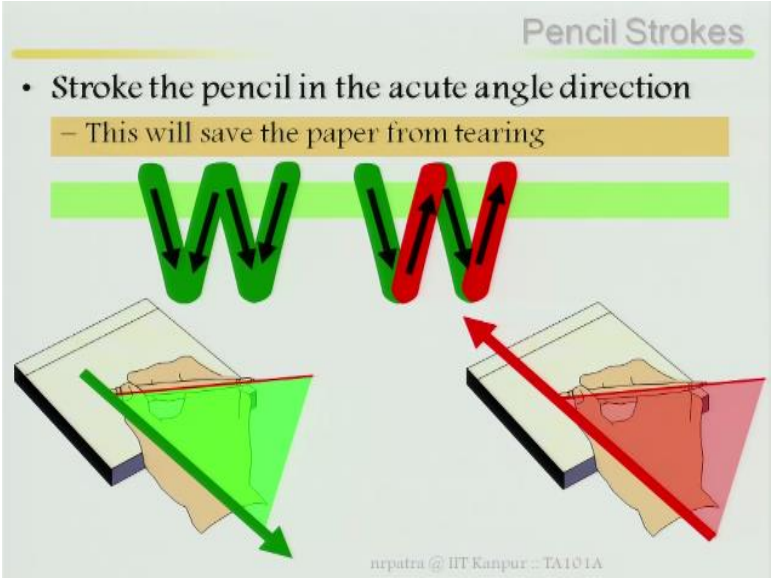

Now in this W first you are preparing one stroke, then second, then third, then fourth, but if you are going writing in reverse way the way I say it is wrong, it will tear your paper.

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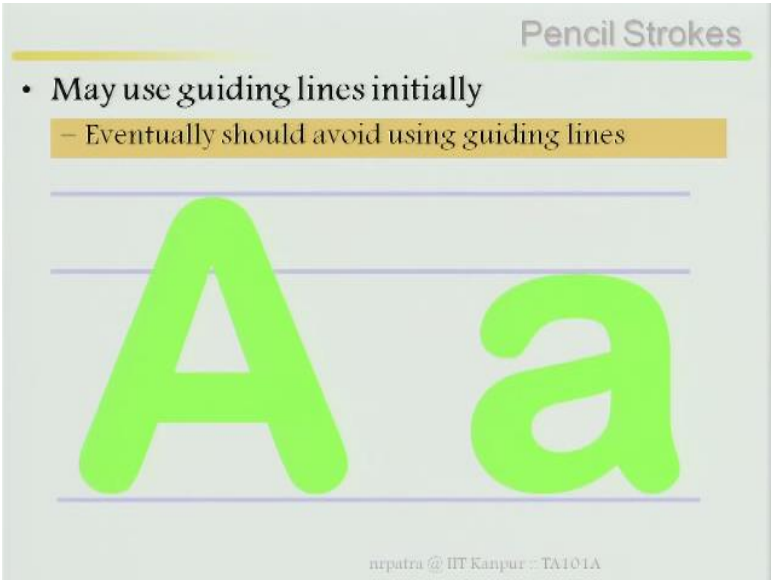

Then we will start one by one, these are all general guidelines, it will eventually once you are going to write your name, roll number, you are anything any, any, any writer part you have to do by means of pencils with by means of lettering with a proper stroke, some of this is.

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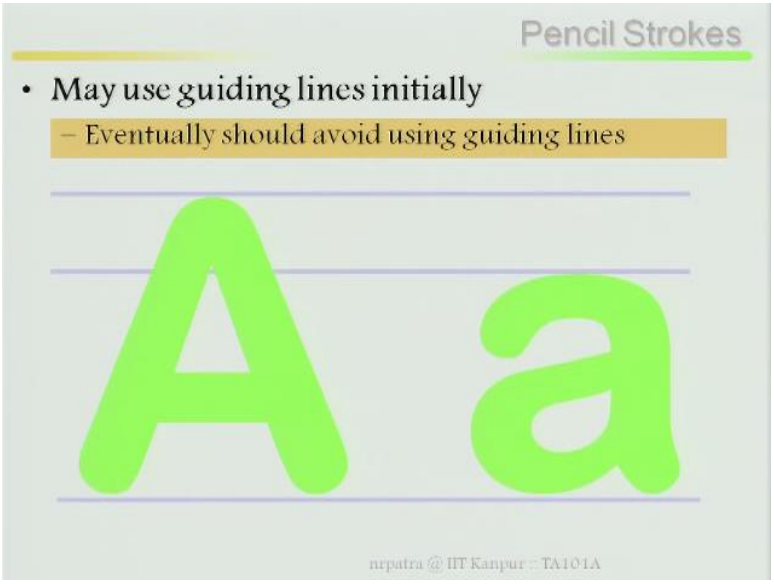

Capital A and this is small a

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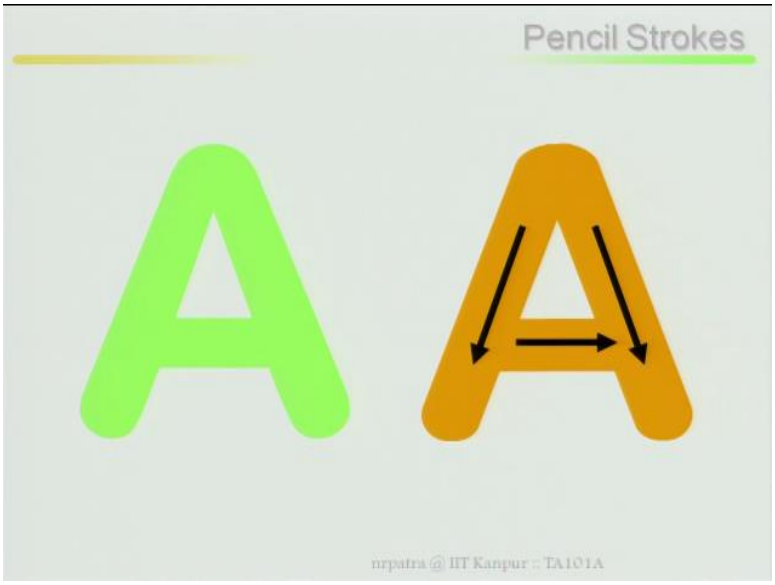

How I am going to write capital A, look at the sequence.

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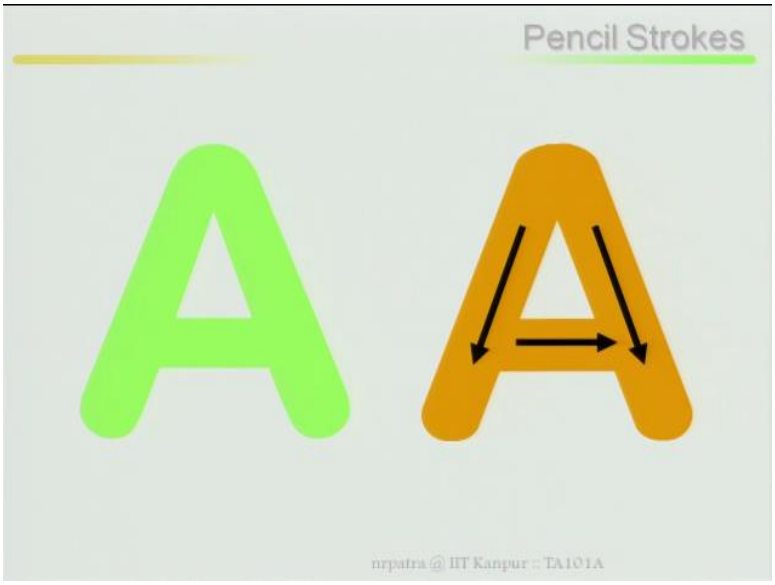

The A is looking like this, now the sequence is, this is my first stroke, second stroke, then this will be a third stroke

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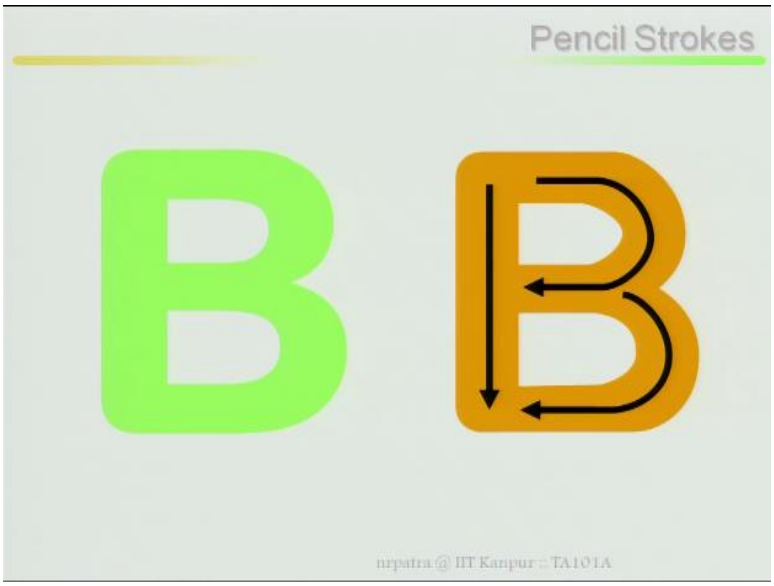

Similarly B look at the B, B is your first stroke, second stroke, then first stroke, second stroke, then third stroke, it completes your B.

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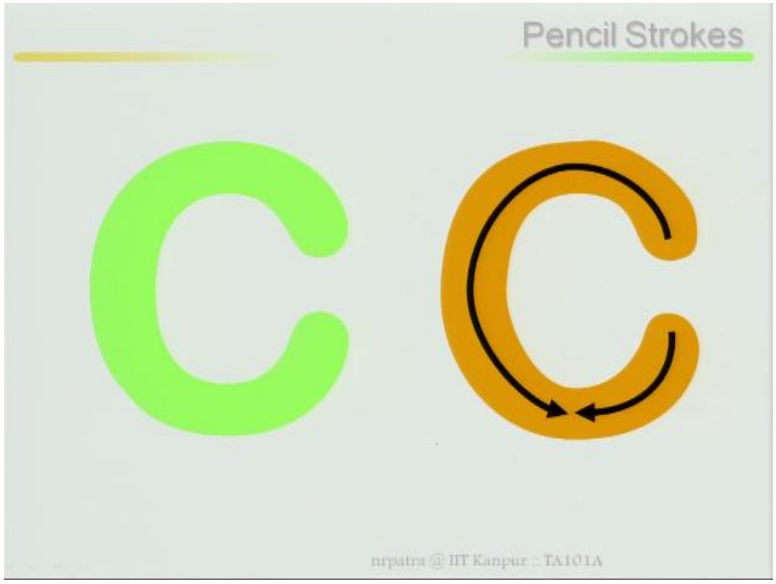

Look at this C how I am writing the C, first part of your stroke is this way.

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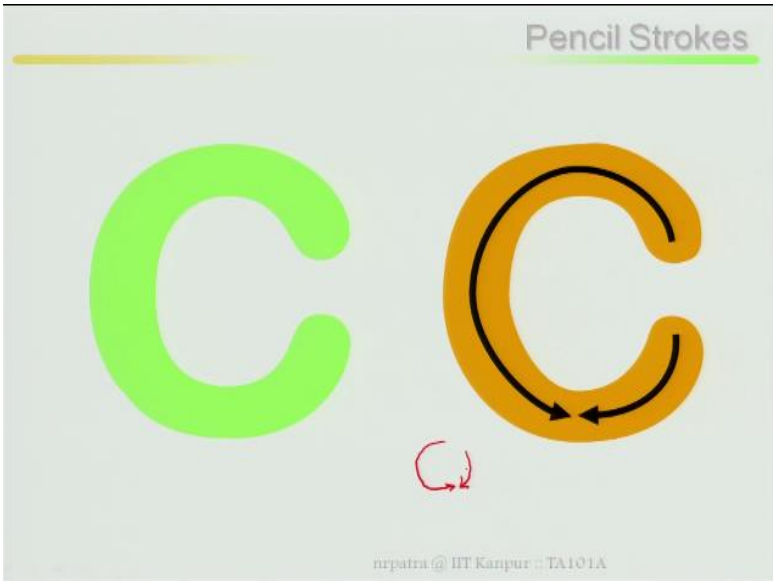

Look at this, this is half almost more than half part, then you cover with this another part, this cover your C in engineering drawing.

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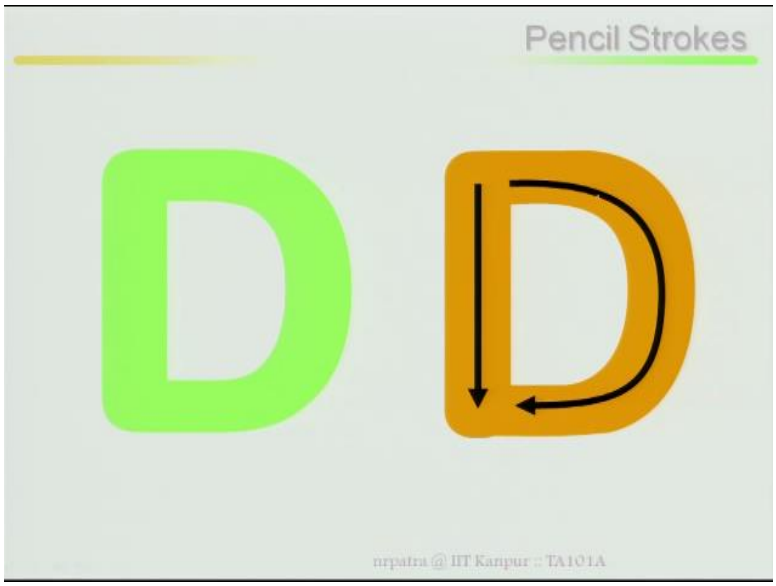

Then come to D first part of your D is a simple stroke, stroke on then D will be covering this way, this is your D, similarly.

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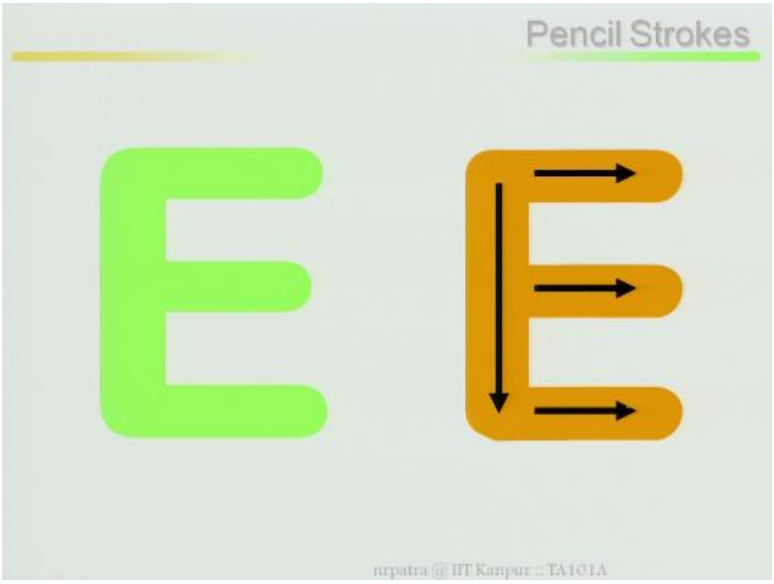

E, is E is very simple, stroke one, two, three, and four, first one is your vertically.

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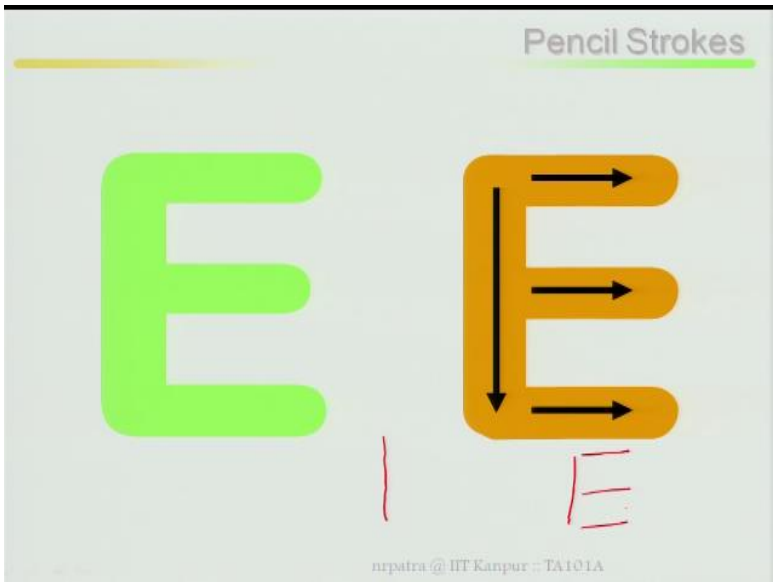
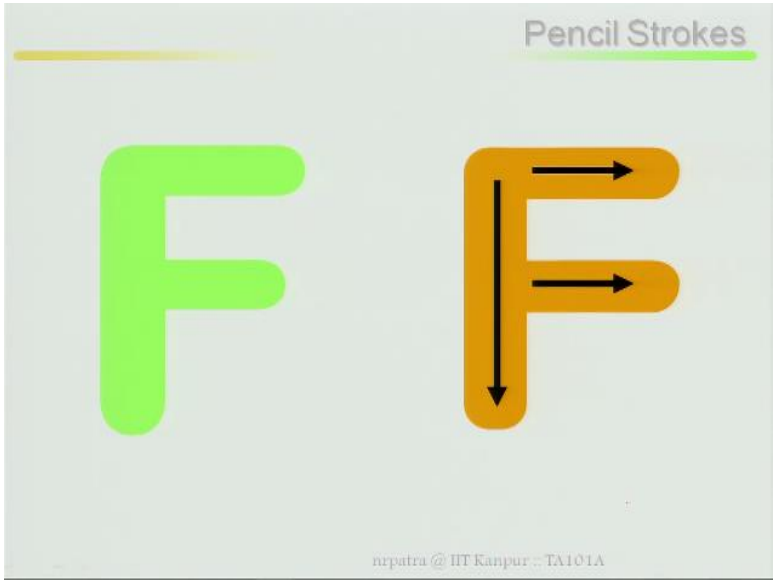


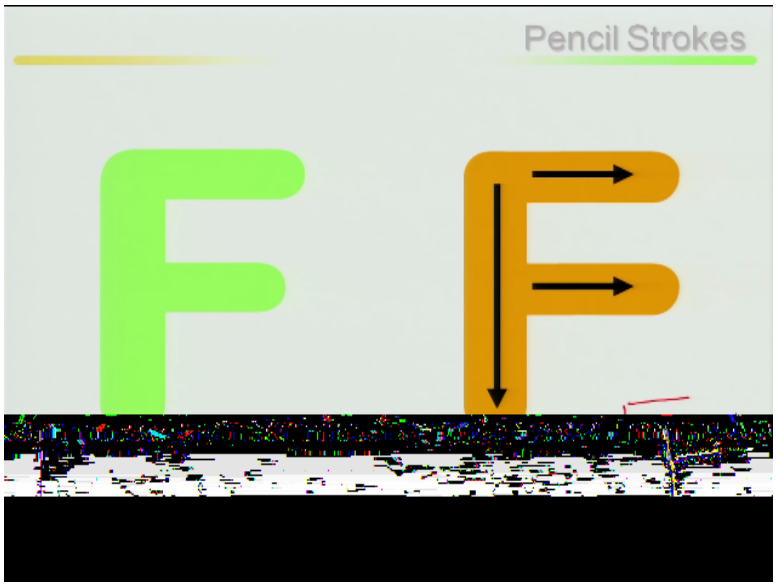
This is first one if I write it E look at very carefully this way this, this, this, this is the writing particularly in engineering drawing.

(Refer Slide Time: 12:25)



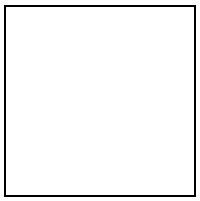
Now write it F how it follows.

(Refer Slide Time: 12:29)



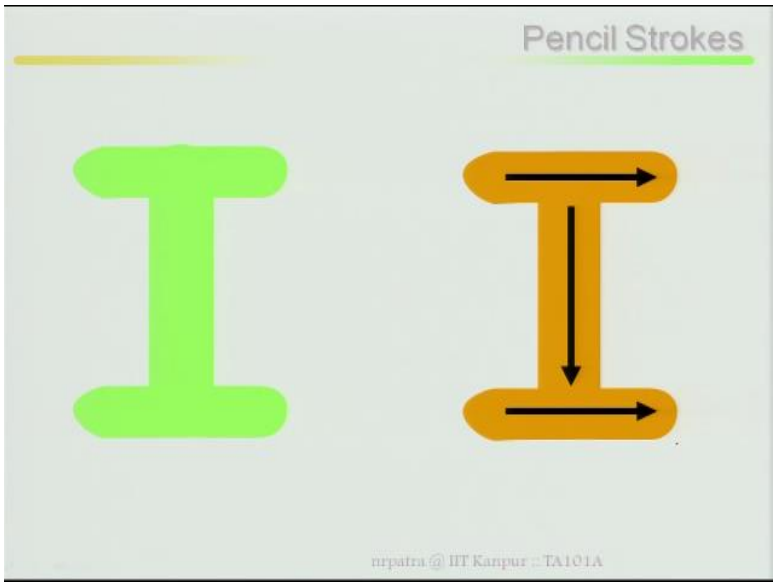
First is like this, then this, then this, so these are all sequence, these are all guidelines how to write it alphabets ABCDEF.

(Refer Slide Time: 12:36)



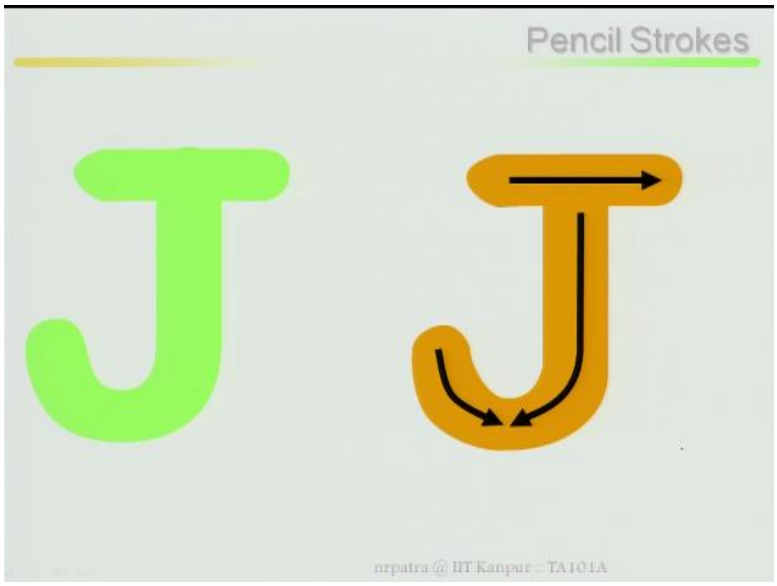
Then similarly G

(Refer Slide Time: 12:44)



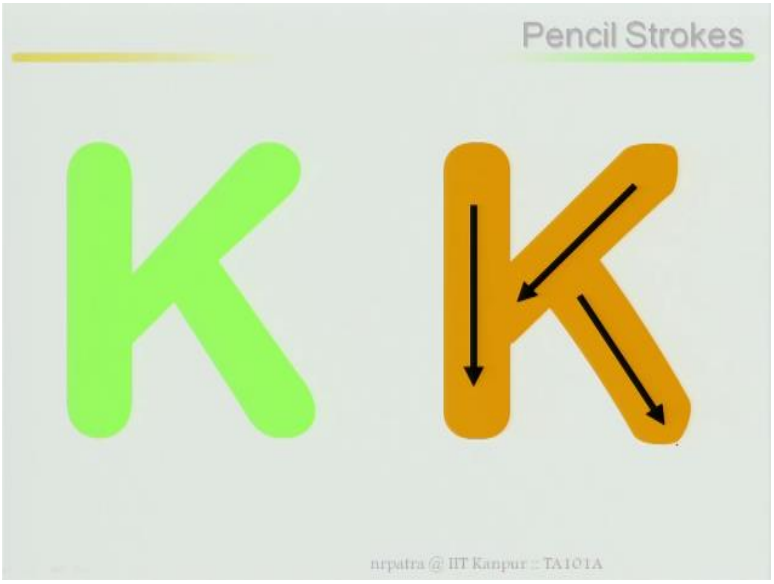
Similarly I.

(Refer Slide Time: 12:46)



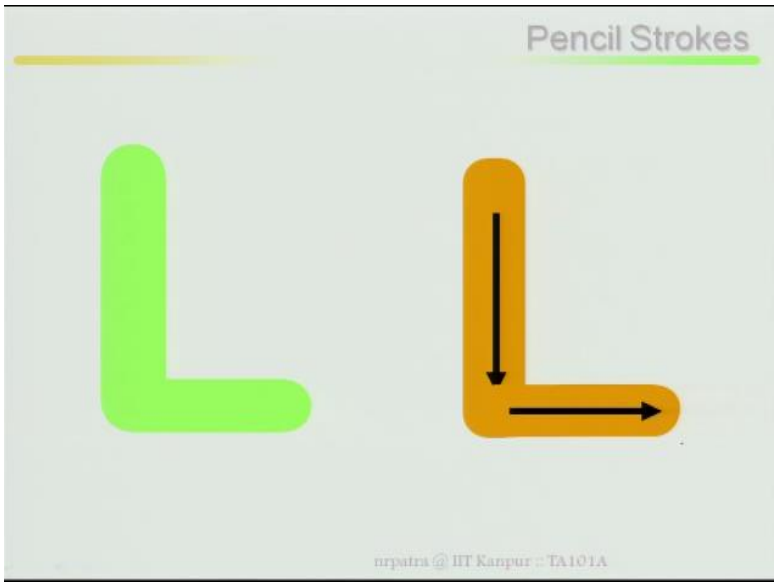
J

(Refer Slide Time: 12:49)



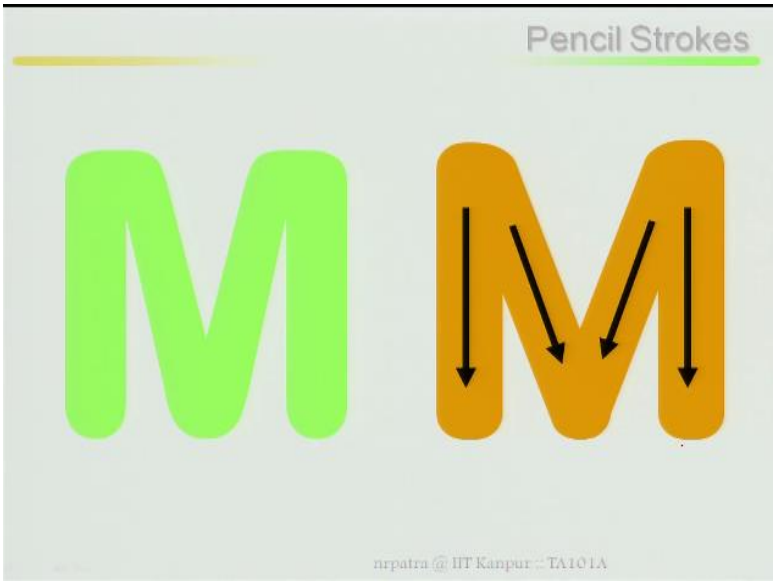
Then similarly K

(Refer Slide Time: 12:51)



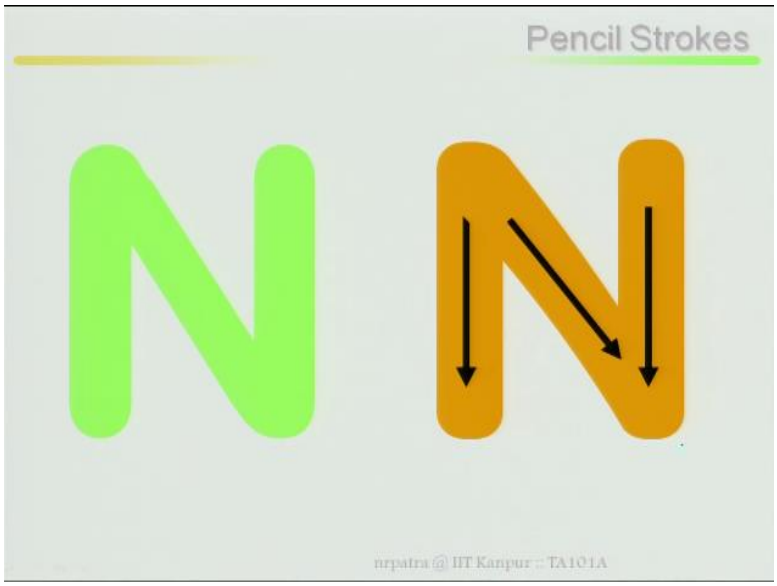
Then similarly L

(Refer Slide Time: 12:55)



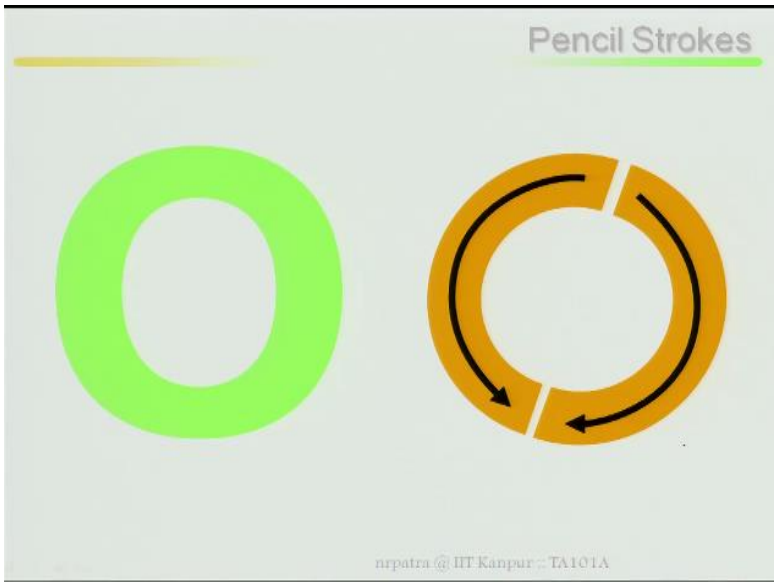
Then look at the M

(Refer Slide Time: 12:59)



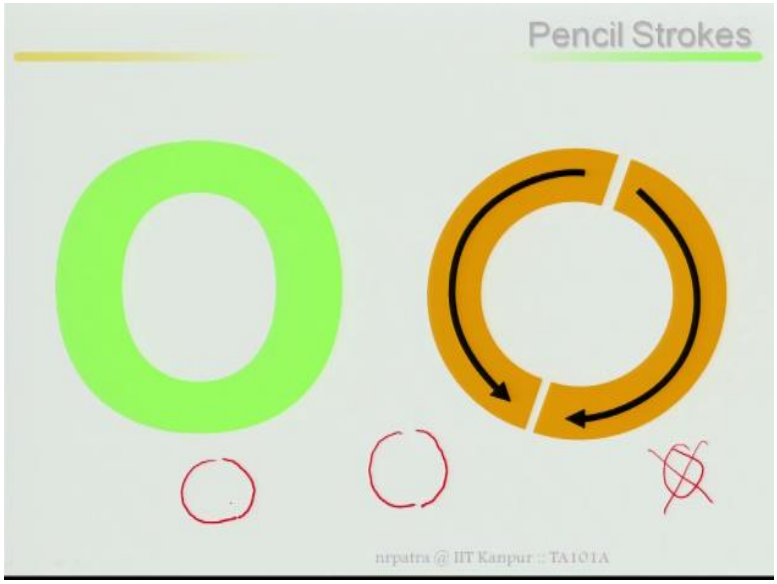
Then N.

(Refer Slide Time: 13:01)



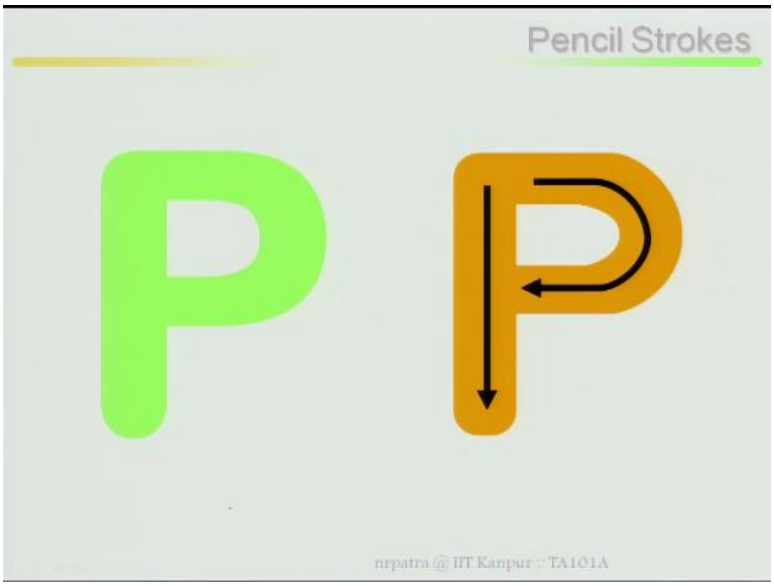
O, O is typically, its covers O is if you look at here O, first part of your O is

(Refer Slide Time: 13:11)



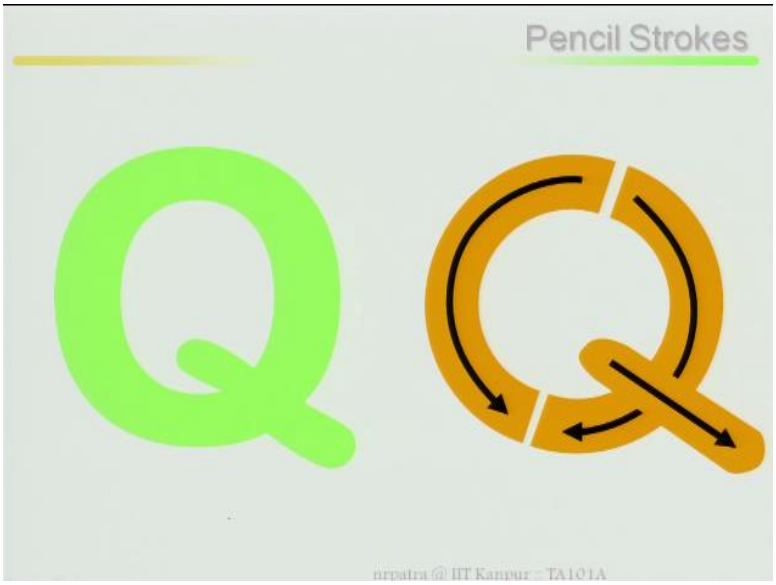
This way then completes this way, sometimes in normal practice we are writing O like this, this is as far us as engineering drawing is concerned this is not correct, so you are writing O this way, then second stroke will be this way, this completes your O.

(Refer Slide Time: 13:32)



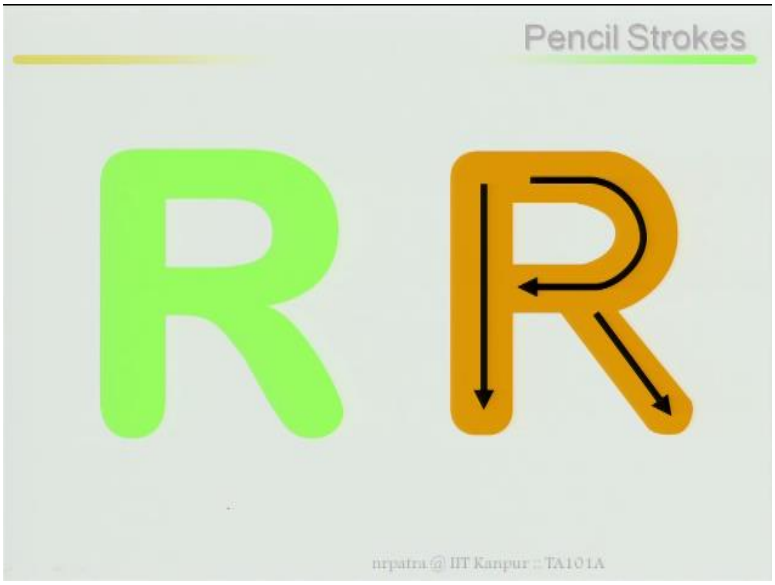
Then P, typical P

(Refer Slide Time: 13:38)



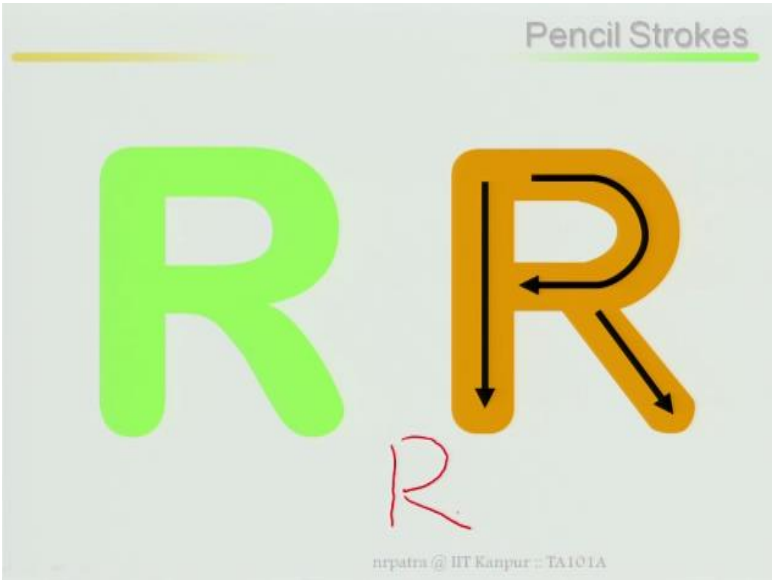
This will be easy, then Q, this will be

(Refer Slide Time: 13:42)



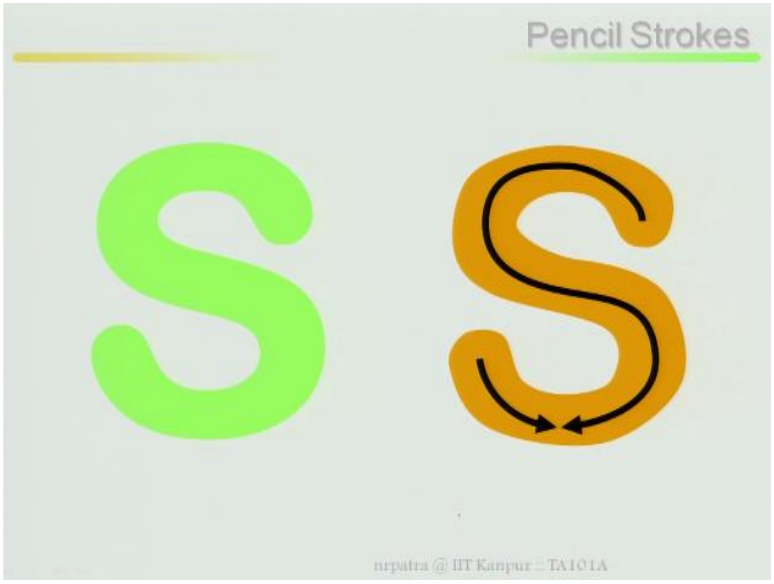
Then R, stroke one, stroke two, and stroke three, if you look at your R how do I write the R?

(Refer Slide Time: 13:51)



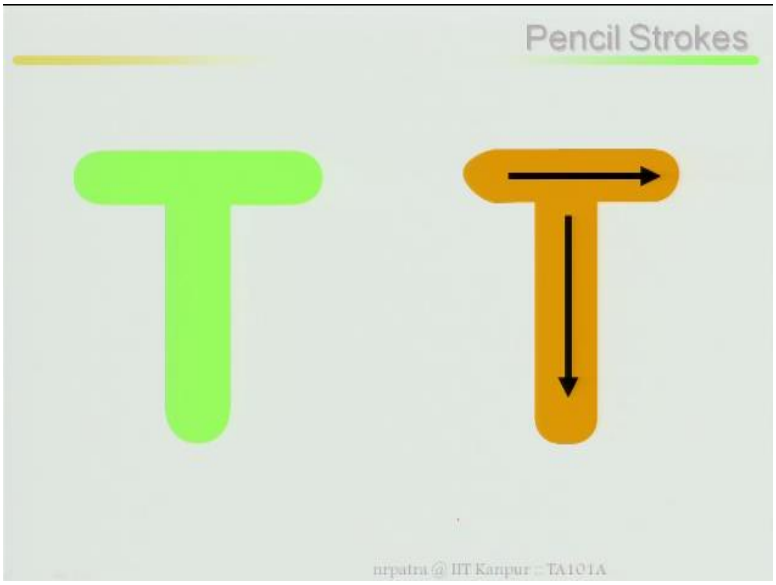
One, two, then three, sequence of your R

(Refer Slide Time: 13:59)



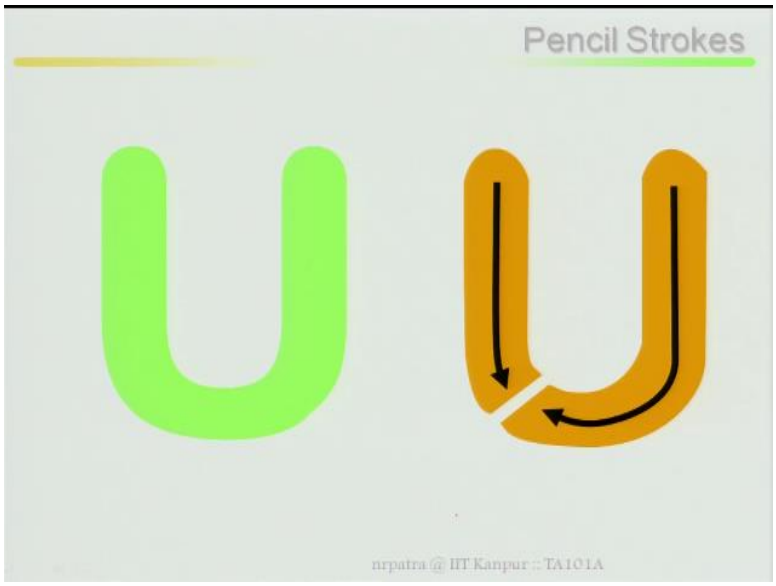
Then S

(Refer Slide Time: 14:03)



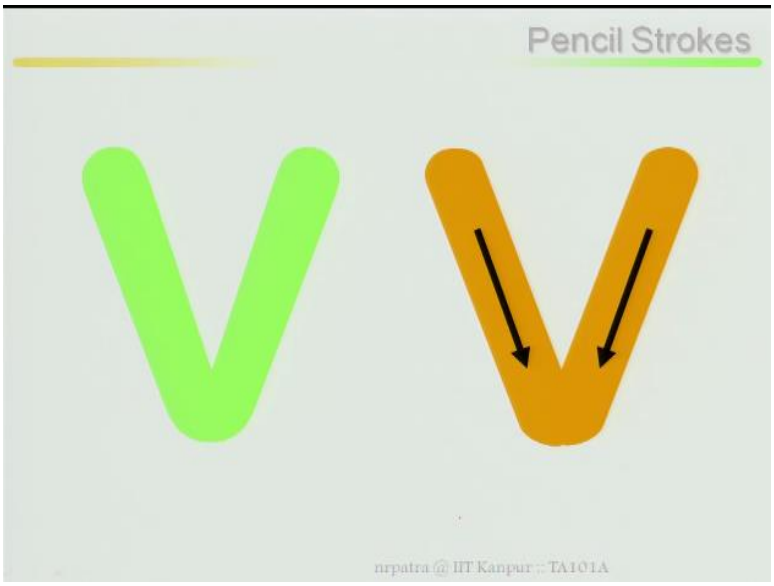
Then T

(Refer Slide Time: 14:05)



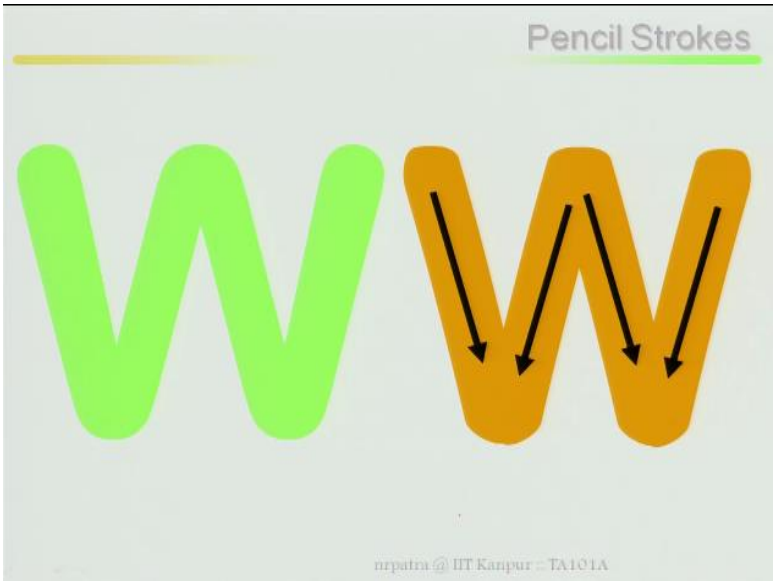
Then U

(Refer Slide Time: 14:07)



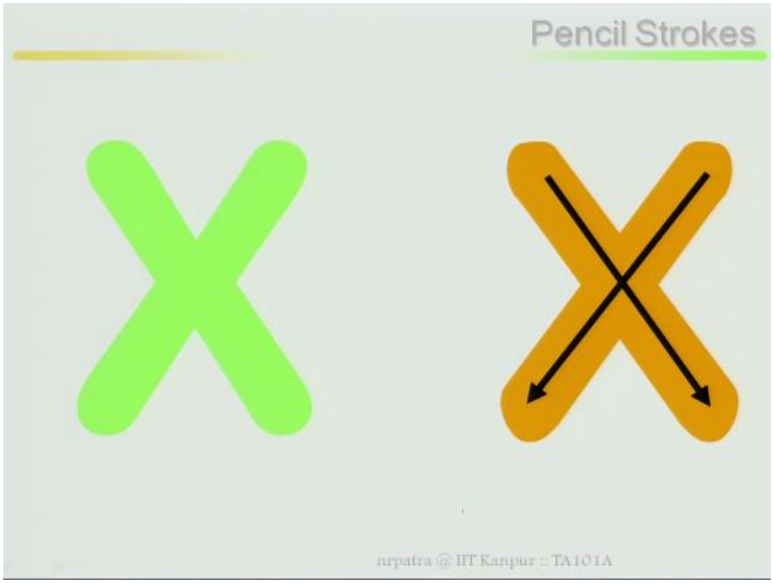
V

(Refer Slide Time: 14:09)



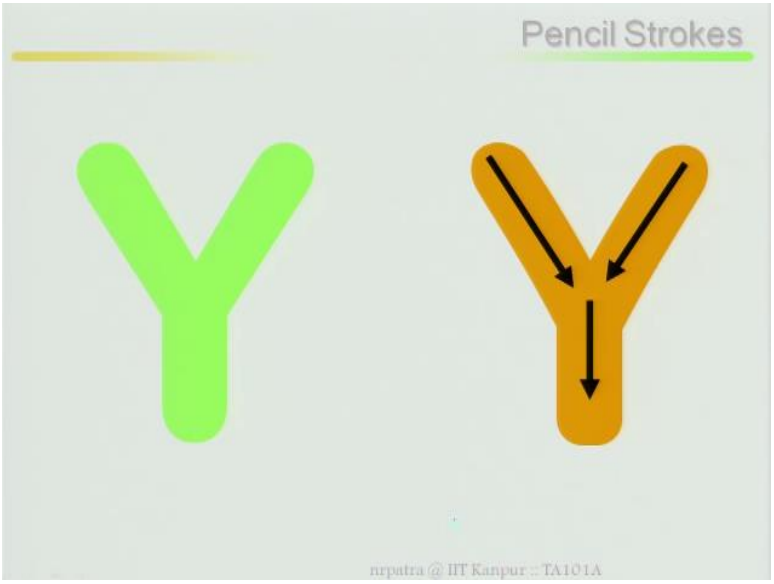
As I said W are layer, this is you are W

(Refer Slide Time: 14:31)



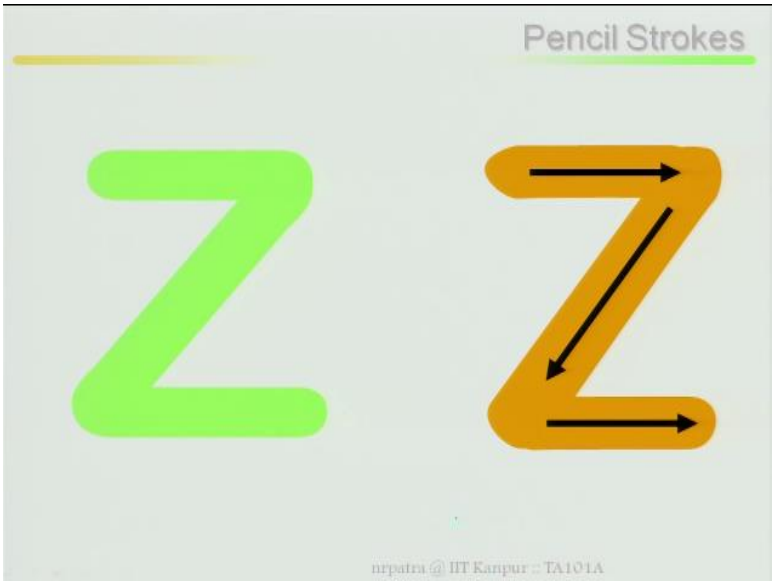
Then X

(Refer Slide Time: 14:14)



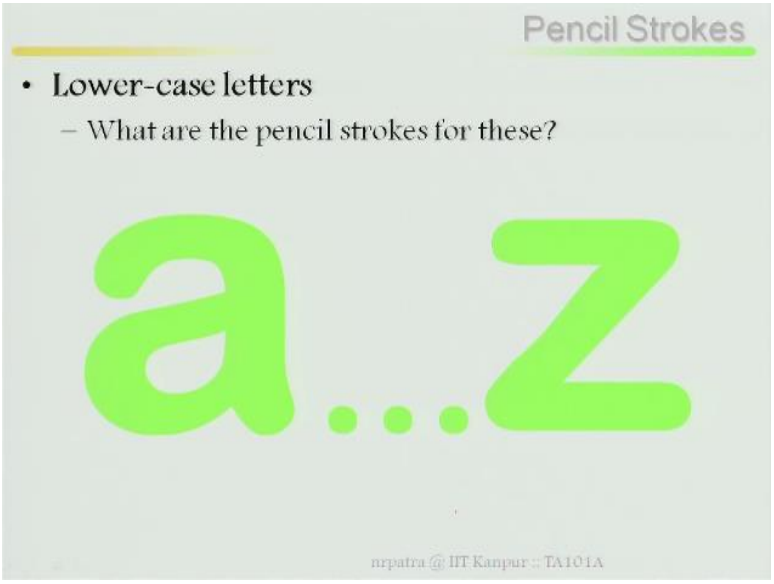
Y

(Refer Slide Time: 14:18)



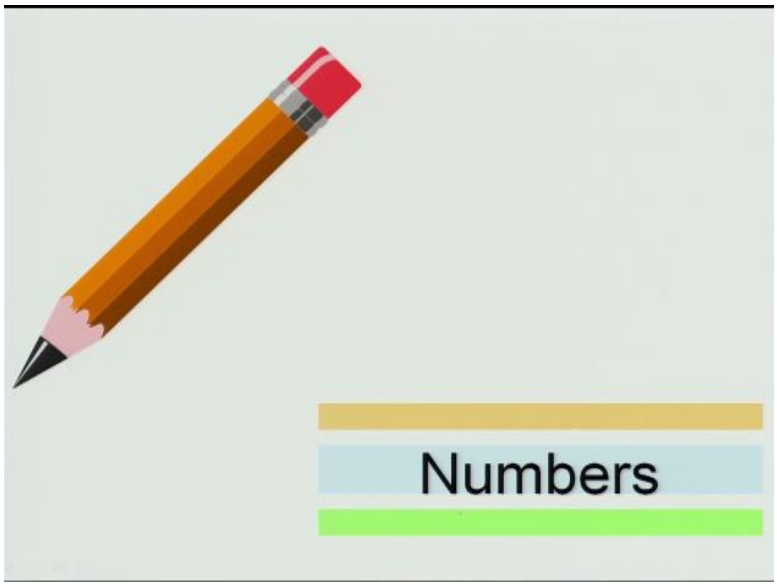
Then is your Z.

(Refer Slide Time: 14:21)



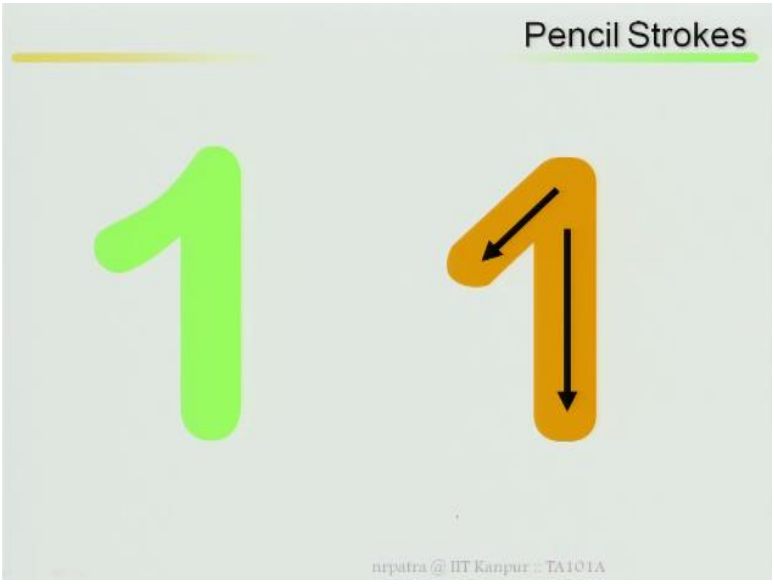
So similarly these are all your upper case, similarly lower case also you can do it for a to z, a to z for lower case.

(Refer Slide Time: 14:30)



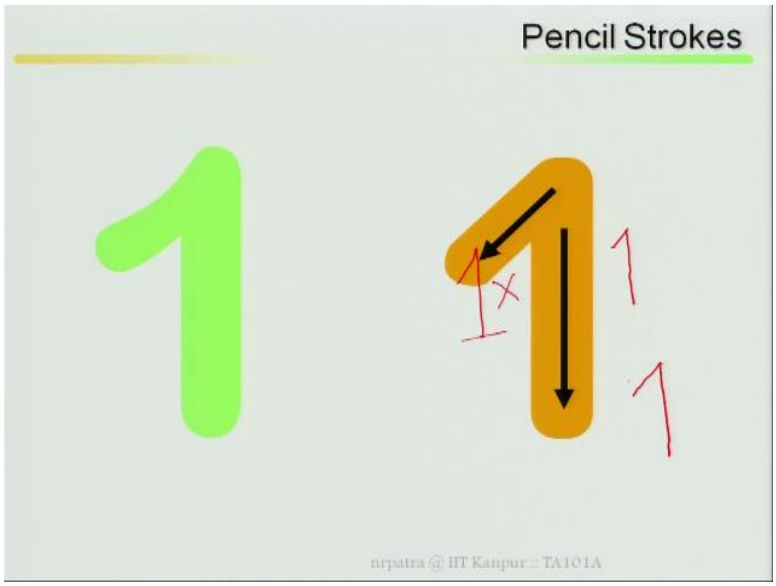
Then come to the numbers, in case of numbers.

(Refer Slide Time: 14:36)



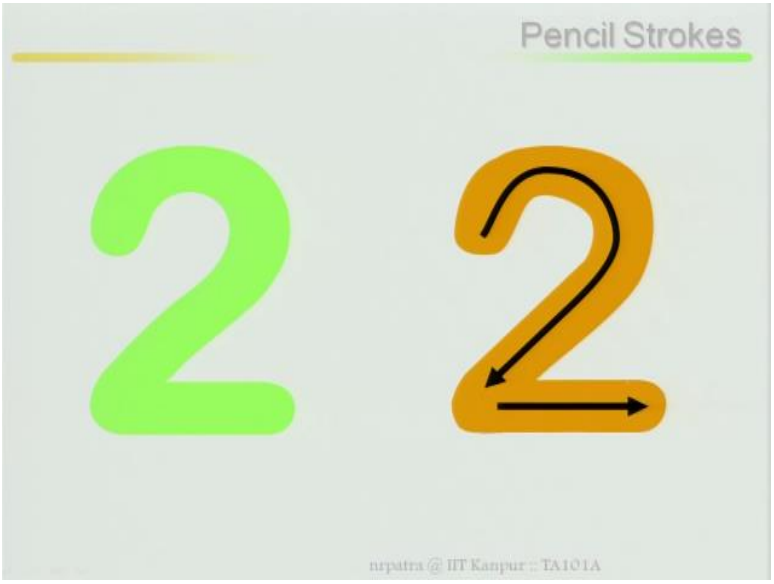
Look at how this 1, pencil strokes, first one, then second one.

(Refer Slide Time: 14:46)



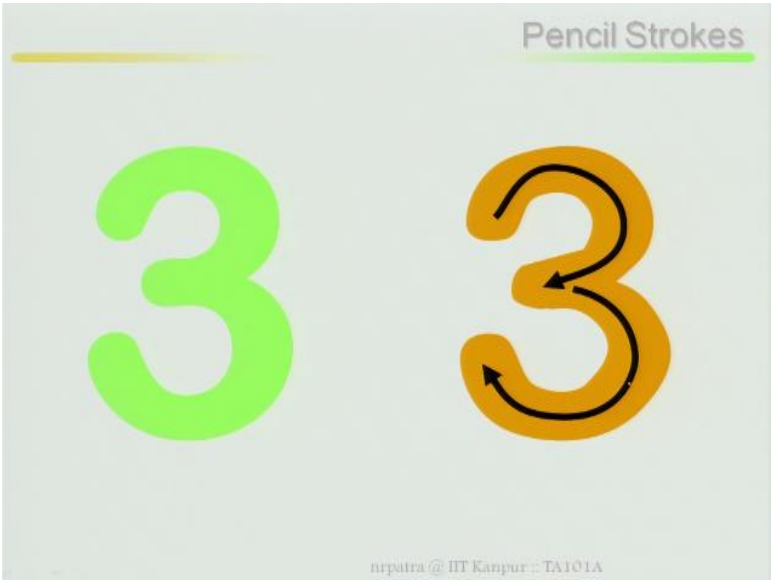
I cannot write in engineering drawing this is 1, this is wrong, it may be a normal practice to write 1 like this but the moment I am writing in pencil in engineering graphics 1 is, this shows the 1, number of strokes if you look at first this, then second this, first this then second this 1

(Refer Slide Time: 15:08)



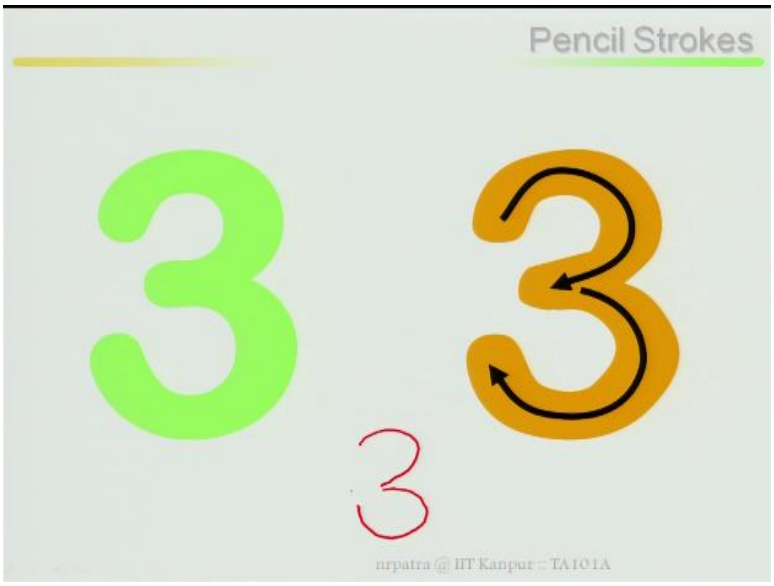
Similarly 2

(Refer Slide Time: 15:14)



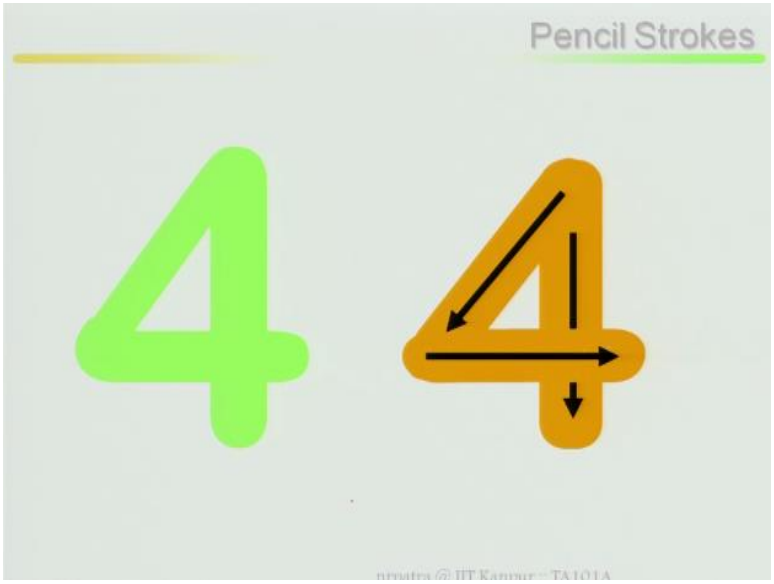
Similarly three, look at this three how it has been started, three it is going.

(Refer Slide Time: 15:22)



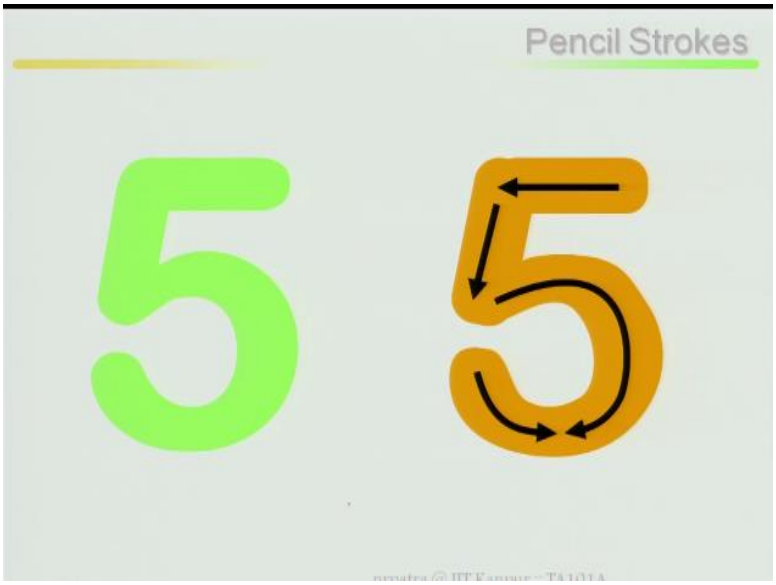
One leave it, then other second stroke is coming this, then this is your 3

(Refer Slide Time: 15:30)



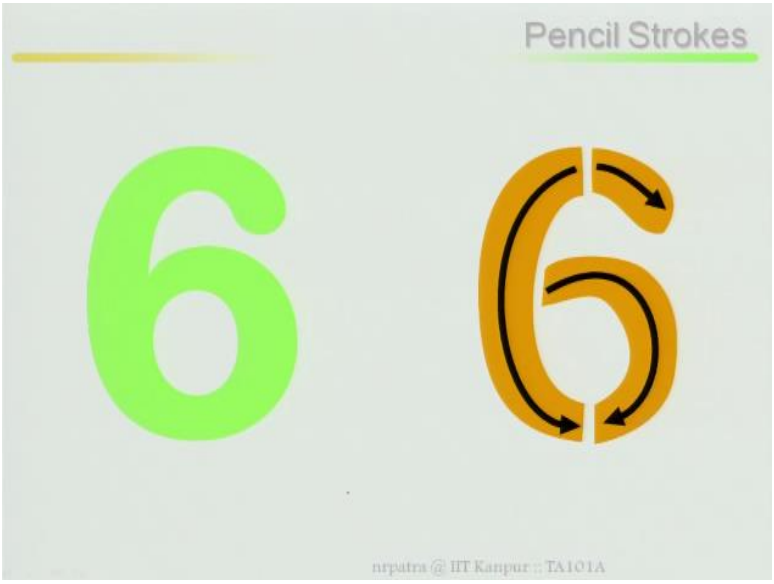
4

(Refer Slide Time: 15:33)



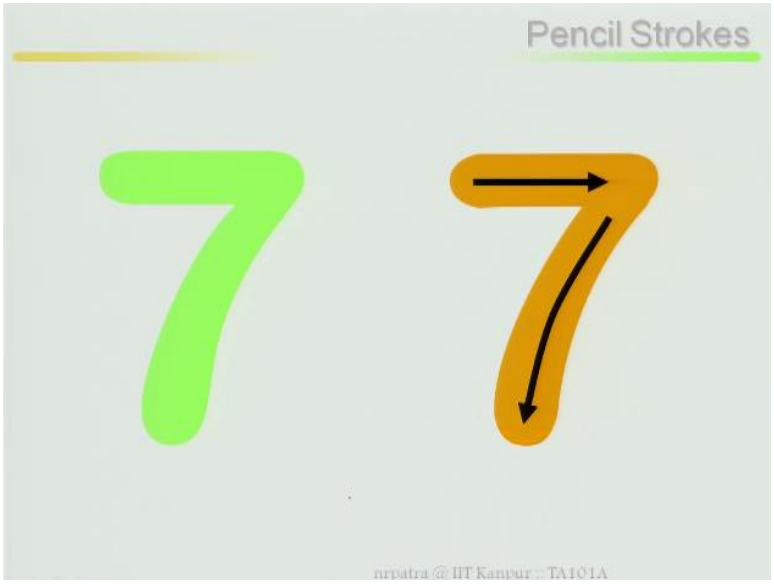
Then 5

(Refer Slide Time: 15:37)



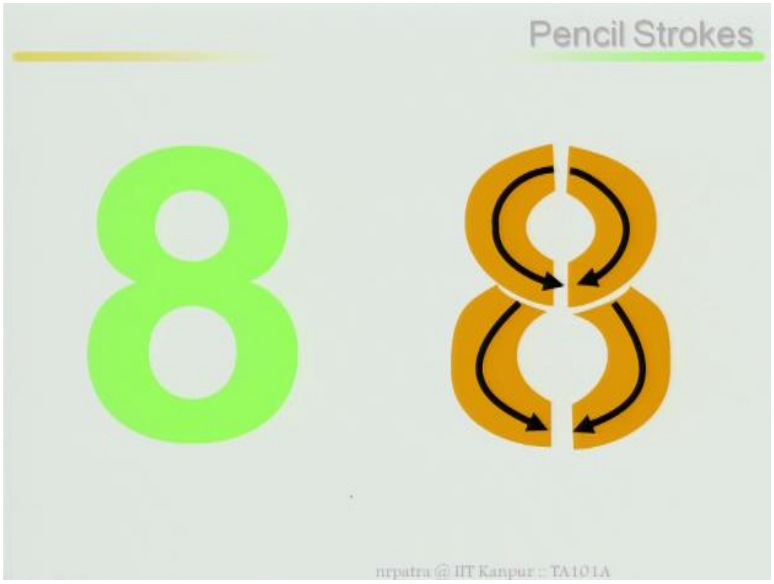
6

(Refer Slide Time: 15:40)



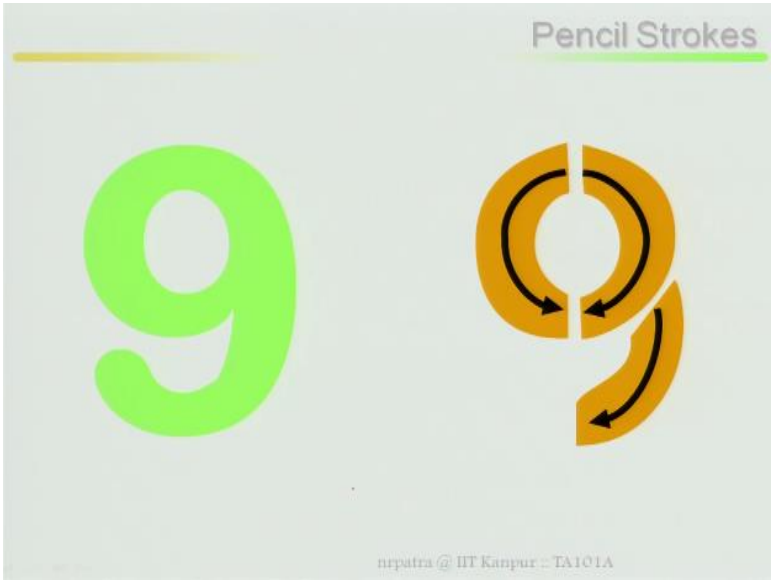
7

(Refer Slide Time: 15:43)



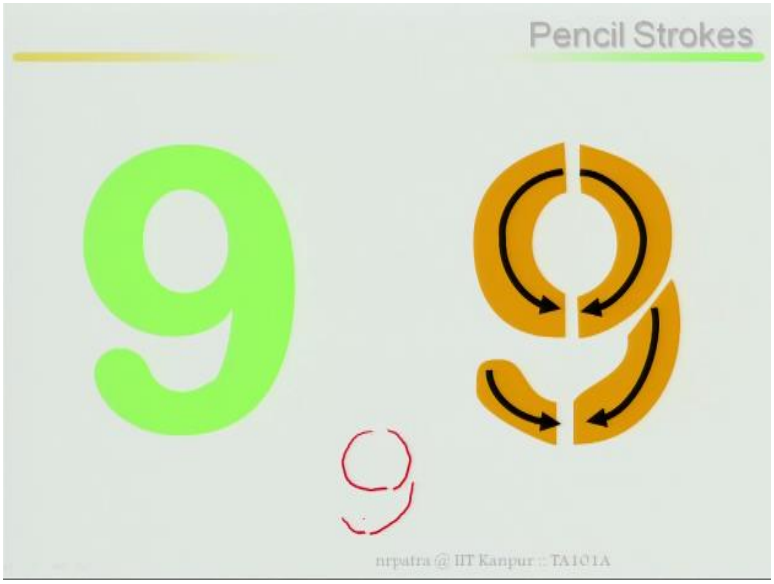
8

(Refer Slide Time: 15:47)



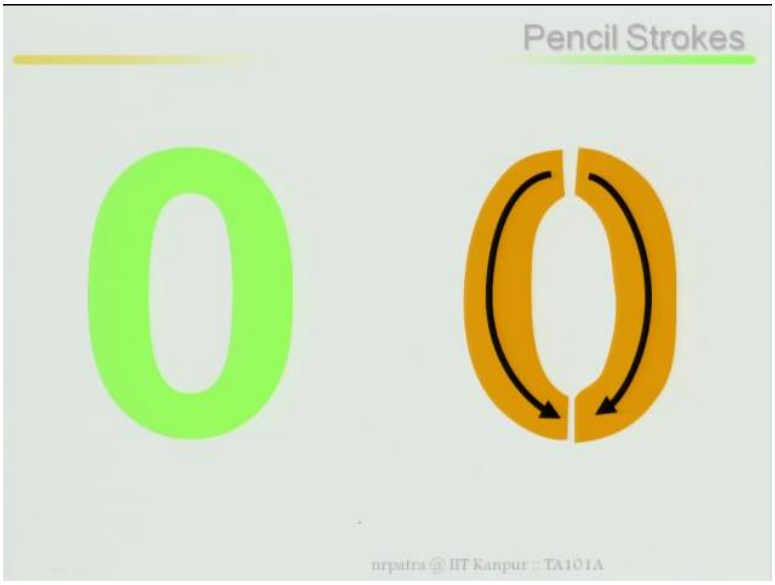
9, look at this 9, if I make it this is a complete circle, so I can make it.

(Refer Slide Time: 15:58)



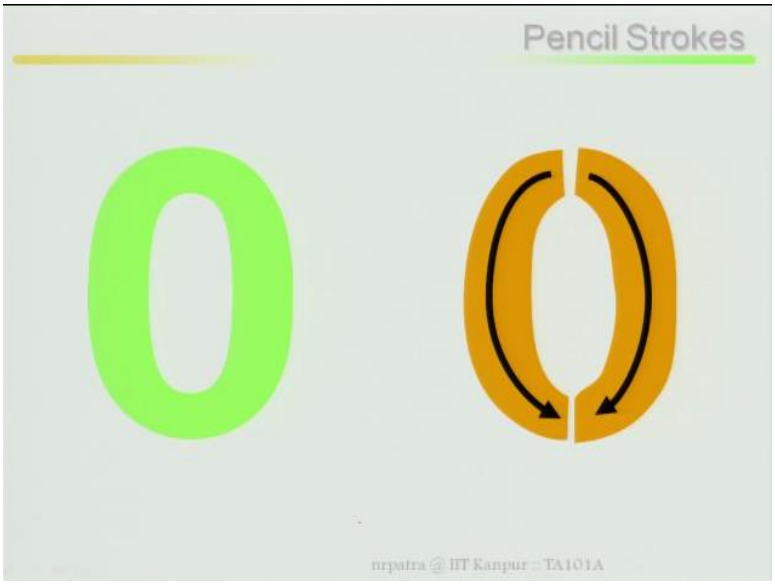
This, this, then here I will start here, then it covers by this, this completes the 9.

(Refer Slide Time: 16:09)



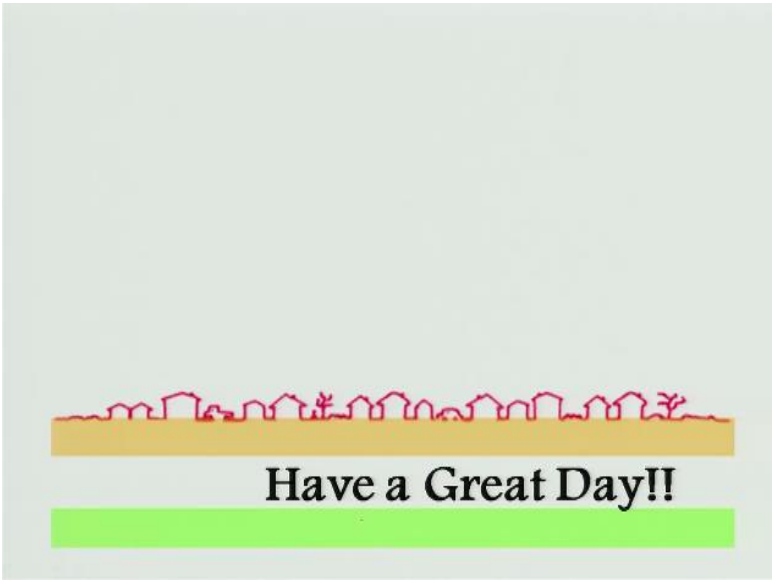
Then this is your 0, so these are all requirement while doing your drawings in engineering graphics you should know this lettering because

(Refer Slide Time: 16:20)



Once you do it at the end you may write title box, you may write question number one, you can write it projection number 1, you can write your title box name, roll number, then you have to follow not by pen, by pencil practicing you can write it your lettering so over the period of time this lettering will be practice it by yourself so as the days progress so lettering will come automatically for the way it will be for engineering graphics, thank you.

(Refer Slide Time: 16:53)



Acknowledgement
Ministry of Human Resource & Development

Prof. Satyaki Roy
Co-ordinator, NPTEL IIT Kanpur

NPTEL Team
Sanjay Pal
Ashish Singh
Badal Pradhan
Tapobrata Das
Ram Chandra
Dilip Tripathi
Manoj Shrivastava
Padam Shukla
Sanjay Mishra
Shubham Rawat
Shikha Gupta
K. K. Mishra
Aradhana Singh
Sweta
Ashutosh Gairola
Dilip Katiyar
Sharwan
Hari Ram
Bhadra Rao

Puneet Kumar Bajpai
Lalty Dutta
Ajay Kanaujia
Shivendra Kumar Tiwari

an IIT Kanpur Production