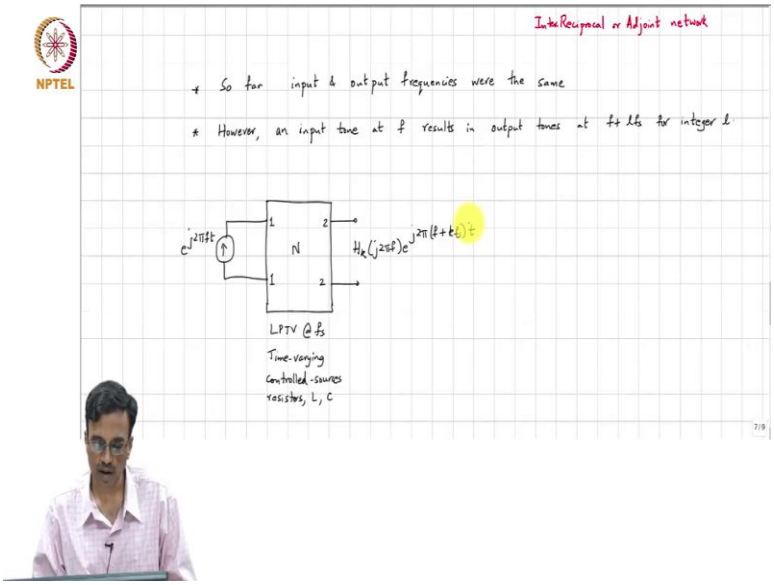
Introduction to Time - Varying Electrical Networks
Professor Shanthi Pavan
Department of Electrical Engineering
Indian Institute of Technology Madras
Lecture 58
The frequency-reversal theorem for inter-reciprocal (adjoint) LPTV networks introduction

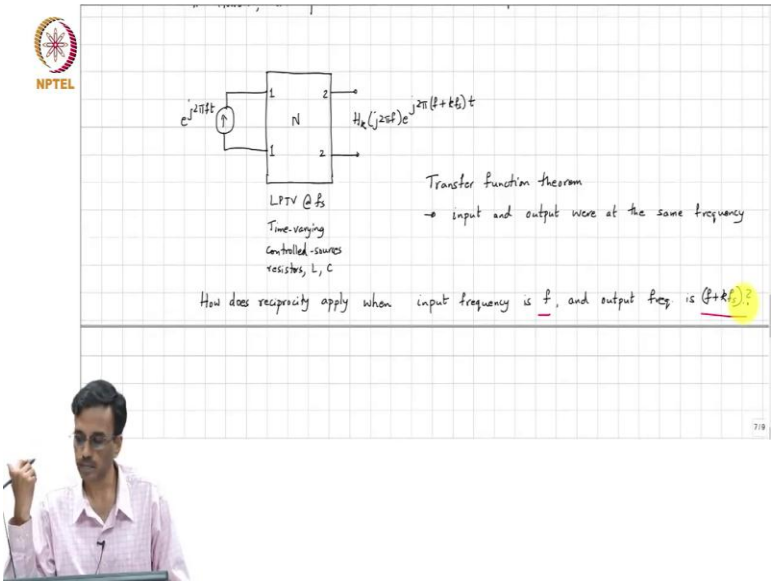
(Refer Slide Time: 0:20)



So, far input and output frequencies were the same. However, an input tone at f results in output tones at f plus say lfs for integer l. So, now the question we would like to answer is, so we have our LPTV network N, this is LPTV and LPTV at fs with as usual all time varying component, time varying control sources, resistors, inductors, capacitors.

And the question we are trying to ask now therefore is, so the last time around we just considered applying an input tone at f and we are only concerned about the output tone at also at f. So, what we will do going forward the question that we will ask is, well, this is going to be an output at a frequency say H sub k of j 2 pi f e to the j 2 pi f plus k fs times t. So, is there anything that we can, in other words, in the previous case we were interested in the input was at f and the output was at f.

(Refer Slide Time: 3:14)



Now, the question is how does it, how does reciprocity apply when input frequency is f and output frequency is f plus k fs. So, I mean when we looked at the transfer function theorem earlier, I mean to repeat again input and output were at the same frequency. What we are going to do now is, in the next class what we will do is try to understand what happens when the input frequency is f and the output frequency is f plus k fs, where k is an integer and not equal to 0.