Lecture 1.7: Virtual Source Model

1) What is the “Virtual Source” of a MOSFET?

a) A location at the beginning of the channel where the inversion layer charge is known from 1D MOS electrostatics.

b) A location at the end of the channel where the inversion layer charge is known from 1D MOS electrostatics.

c) A location somewhere within the channel where the inversion layer charge is known from 1D MOS electrostatics.

d) Another name for the location of the pinch-off location in the channel.

e) A hypothetical source with no series resistance.

2) What is the purpose of the empirical saturation function, \( F_{SAT}(V_{DS}) \) in the VS model?

a) To smoothly connect the subthreshold and above threshold regions.

b) To smoothly connect the linear and saturation regions.

c) To smoothly connect linear and square law MOSFETs.

d) To smoothly connect short channel and long channel MOSFETs.

e) To smoothly connect thin gate oxide and thick gate oxide MOSFETs.

3) In the VS model, which device metric controls the output conductance?

a) The DIBL parameter.

b) The SS parameter.

c) The series resistance.

d) The transconductance.

e) The off-current.