

MASSACHUSETTS INSTITUTE OF TECHNOLOGY  
Department of Electrical Engineering and Computer Science

6.002 – Electronic Circuits  
Fall 2002

Corrections to Problem Set 3

**Problem 3.3:** (C) Let  $i_S = I_S + i_s$  and  $v_O = V_O + v_o$ , where  $I_S = 5\text{mA}$ ,  $V_O$  is the operating voltage found in part (B), and  $i_s$  and  $v_o$  are the small-signal components of the source and output voltage respectively. Find the small-signal ratio  $v_o/i_s$  for the operating point found in part (B) using a Taylor series expansion.

**Problem 3.4:** (C) Let  $v_S = V_S + v_s$  and  $v_O = V_O + v_o$  where  $V_S = 1.5\text{V}$ ,  $V_O$  is an operating point and  $v_s$  and  $v_o$  are the small-signal components of  $v_S$  and  $v_O$ . For each of the operating points found in part (A), find the small-signal gain  $v_o/v_s$  using graphical analysis.

The symbol and  $i$ - $v$  characteristic of a tunnel diode are shown in Figure 1.

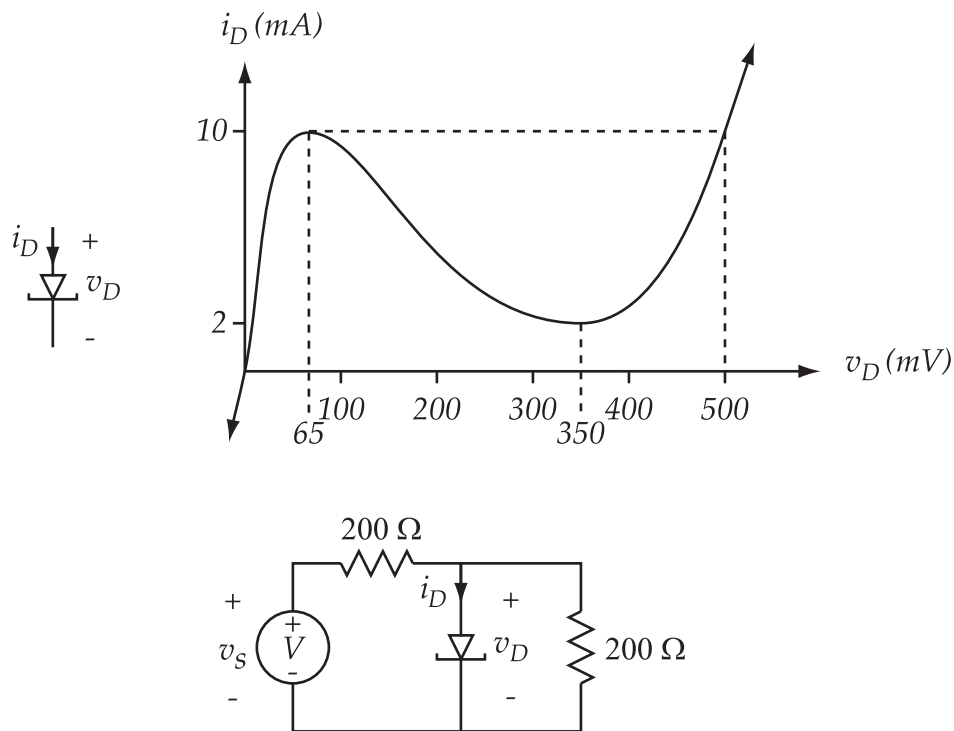


Figure 1: Device and network for Problem 3.4