Group-wise assignments:

Group1 and Group 2: Simulate n-channel MOSFET with Si_3N_4 gate dielectrics of thickness 15 nm and find V_T. Justify your result. Find I_D-V_{DS} characteristics for three different gate voltages. Estimate whether channel length modulation phenomena is included in the simulation or not. If yes, find the early voltage.

Group3 and Group8: Simulate n channel MOSFET with two different substrate doping (i.e., doping of Si wafer) and calculate the V_T. Justify your result considering the expression of V_T. Find V_T for any one substrate doping with Al and n-poly as gate electrode. Justify your result.

Group 4 and Group 9: Simulate IV characteristic of Si and Ge diode and compare the result. Find breakdown voltage for both cases. Simulate voltage regulator circuit using Si diode.

Group 6 and Group 10: Simulate Si and GaAs diode. Simulate half wave rectifier characteristic for both cases.

Group 11: Simulate two n channel MOSFETs one with SiO_2 of thickness 10 nm and another with Si_3N_4 of thickness 20 nm as gate dielectric. Calculate V_T and justify the result.

Group 5 and Group7: Simulate IV characteristic of Si diode with two different doping concentrations. Find the breakdown voltages and justify the result.