

Assignment-3

1. Complete the circuit analysis with ac-side inductance of the single-phase *thyristor* bridge referring to that of the single-phase diode bridge. Derive the expressions of the input current i_s , the overlap angle and the average voltage.
2. A DC load takes a level current of 100A from a single-phase thyristor AC-DC bridge. If the AC phase voltage is 220V and the conditions of the firing delay angle are listed as follows, calculate: 1) the mean load voltage, 2) the power factor on the AC side; draw the waveforms of output voltage, input currents and thyristor voltage with the reference of input voltages. Neglect device volt-drop.
Assume the commutation overlap negligible.

a) 30° , b) 150° .