ELEC-E8412 **Power Electronics**
Exercise No 04 02.11.2023

Problem 1:

A single-phase full wave rectifier with resistive load of 12 Ω and AC source of 120 V_{rms}, 60 Hz. Determine,

a) The average, peak, and rms currents in the load and in each diode.
b) Determine the peak reverse voltage across each of the diodes.

Problem 2:
A single-phase full-wave rectifier with an ac source of 200 Sin(ω t) V has a resistive load of 20 Ω. ω=377.
Determine

a) Average current in the load and in each diode.
b) Peak reverse voltage across each of the diodes.
c) Power factor

Problem 3:

For the controlled single-phase bridge rectifier has an 18 Ω resistive load and has a 120 V_{rms} at 60 Hz source. The delay angle α is 45.

Determine

a) average load current
b) rms load current
c) rms source current
d) power factor

Problem 4:

A load of 50 Ω is connected to an AC source of 60 Hz, 230 V_{rms}. Full wave-controlled rectifiers has a delay angle of 45 degrees.

Determine

a) Average load current
b) Power absorbed by the load
c) Source VA.

Problem 5:

For an ideal full-wave rectifier with a 60-Hz ac source and maximum voltage of 100 V.

It is to supply a load that requires a dc voltage of 100 V and will draw 0.4 A.
Determine the filter capacitance required to limit the peak-to-peak output voltage ripple to 1 percent of the dc output.

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