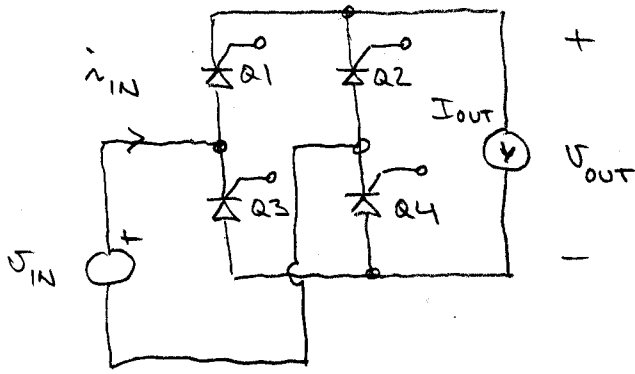
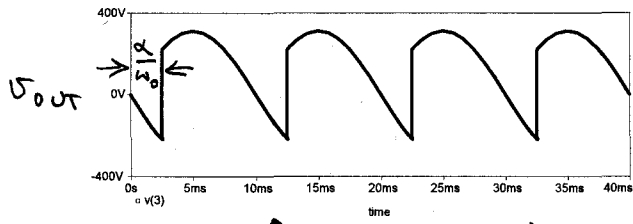
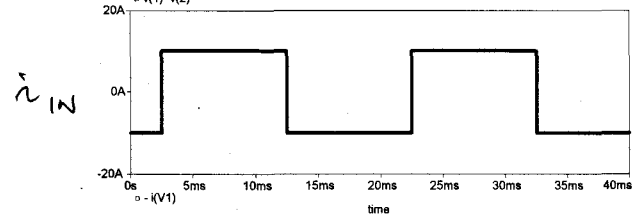
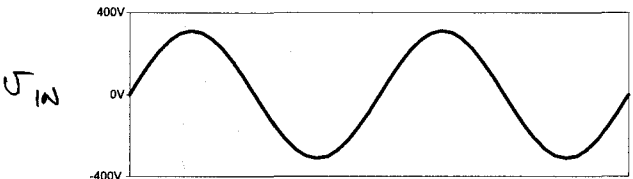


SINGLE-PHASE PHASE-CONTROLLED RECTIFIERS, HANDOUT #2



220V / 50Hz → 10A

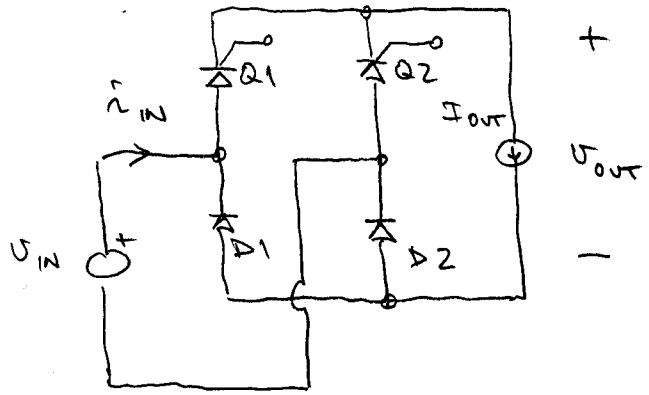


↑ Q1, Q4 ↑ Q2, Q3 ↑ Q1, Q4 ↑ Q2, Q3
 Q1, Q4 Q2, Q3 Q1, Q4 Q2, Q3

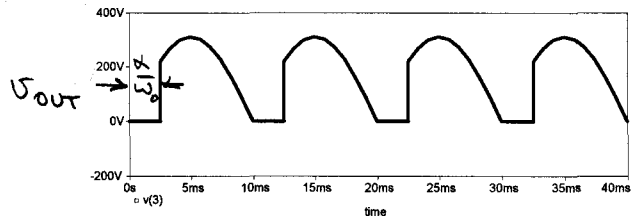
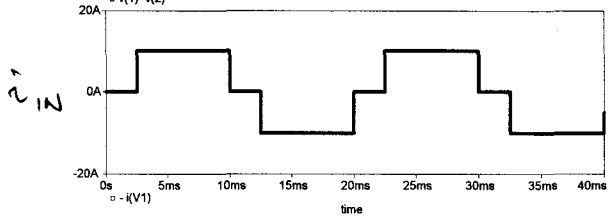
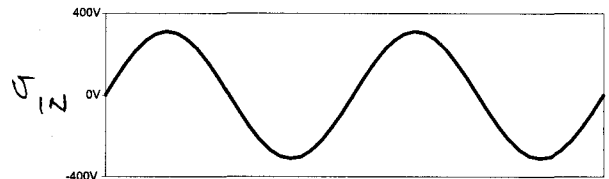
$$u_{IN} = V_m \sin \omega t$$

$$V_{OUT} = \frac{2}{\pi} V_m \cos \alpha$$

$$PF = \frac{2\sqrt{2}}{\pi} \cos \alpha$$



220V / 50Hz → 10A



↑ Q1 ↑ Q2 ↑ Q1 ↑ Q2
 Q1 Q2 Q1 Q2

$$u_{IN} = V_m \sin \omega t$$

$$V_{OUT} = \frac{1}{\pi} V_m (1 + \cos \alpha)$$

$$PF = \frac{1}{\pi} (1 + \cos \alpha) \sqrt{\frac{2\pi}{\pi - \alpha}}$$