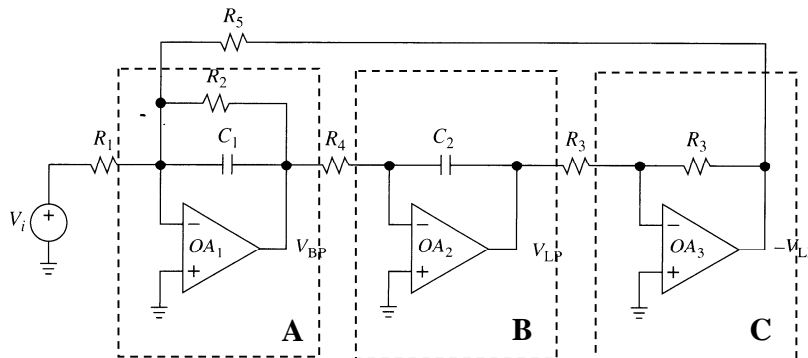


E2.2 Analogue electronics
Problem sheet 7 (Week 10)

Q1: (Tutorial question week 10/11)

Draw a flow graph for the biquadratic filter below, assuming the op-amps are ideal. Write an expression for the three transfer functions $G_{LP} = \frac{V_{LP}}{V_i}$, $G_{BP} = \frac{V_{BP}}{V_i}$ in terms of the block transimpedance gains and the connecting conductances.



Q2. You are given the Common Emitter Y parameters of a Bipolar transistor. Calculate the Common Base H parameters of this transistor.

Q3. You are given the common source Y matrix of a FET. Compute its transmission matrix in common source configuration.

Q4. You are given the common source transmission matrix of a FET. Compute the common Gate and common Drain transmission matrices.

Q5. Solve the high pass Sallen-Key filter.

Q6. Solve the Deliyannis-Friend all pass filter