

## Problem 5 (30 points)

- $\alpha$  (e) Let  $V_A$  be finite. Draw the small-signal circuit with the transistor hybrid-π model. How to determine the hybrid-π model parameters (expressions)?
- b (a) Derive the equivalent input resistance  $R_{ib}$ .
- <sup>c</sup> (b) Derive the small-signal voltage gain.
- (c) Bonus (5 points) Comment on the type and main features of the amplifier circuit. (Work with symbols for Problem 5)

