1. For the circuit shown below estimate the midband values for input resistance, output resistance, current gain, and voltage gain ($A_{V_{sm}}$).

\[ \beta_0 = 100 \]

![Circuit diagram](image)

2. Repeat problem 1 for the cases of Common Emitter with no bypass capacitor, Common Base, and Common Collector.

3. For the circuit shown below estimate the midband values for input resistance, output resistance, current gain, and voltage gain ($A_{V_{sm}}$).

\[ \beta_0 = 100 \]

![Circuit diagram](image)
4. For the circuit shown below estimate the midband values for input resistance, output resistance, current gain, and voltage gain ($A_{V_{sm}}$).

5. Repeat problem 1 for the cases of Common Source with no bypass capacitor, Common Gate, and Common Drain.

6. For the circuit shown below estimate the midband values for input resistance, output resistance, current gain, and voltage gain ($A_{V_{sm}}$).
7. For the cascaded 2-stage amplifier determine the midband values for input resistance, output resistance, current gain, and voltage gain ($A_{V_{sm}}$).

8. For the circuit shown below estimate the low frequency point at which $A_{V_{s}}$ becomes 0.707 of its maximum value. Also find the input impedance at 100 kHz.

9. For the circuit shown above estimate the high frequency point at which $A_{V_{s}}$ becomes 0.707 of its maximum value. Also find the input impedance at 100 kHz.
10. For the circuit shown below estimate the low frequency point at which $A_{V_s}$ becomes 0.707 of its maximum value. Also find the input impedance at 100 kHz.

![Circuit Diagram](image)

$\beta_0 = 100$

$C_\mu = 1 \, \text{pF}$

$C_\pi = 5.7 \, \text{pF}$

11. For the circuit shown above estimate the high frequency point at which $A_{V_s}$ becomes 0.707 of its maximum value. Also find the input impedance at 100 kHz.

12. For the circuit shown below estimate the low frequency point at which $A_{V_s}$ becomes 0.707 of its maximum value. Also find the input impedance at 100 kHz.

![Circuit Diagram](image)

$K = 2.5 \, \text{mA/V}^2$

$V_p = -2 \, \text{V}$

$V_{12} = 12 \, \text{V}$

$100 \, \text{k}\Omega$

$R_D = 270 \, \Omega$

$C_{gd} = 2 \, \text{pF}$

$C_{gs} = 3 \, \text{pF}$

13. For the circuit shown above estimate the high frequency point at which $A_{V_s}$ becomes 0.707 of its maximum value. Also find the input impedance at 100 kHz.
14. For the circuit shown below estimate the low frequency point at which $A_{vs}$ becomes 0.707 of its maximum value. Also find the input impedance at 100 kHz.

15. For the circuit shown above estimate the high frequency point at which $A_{vs}$ becomes 0.707 of its maximum value. Also find the output impedance at 100 kHz.