Basic Amplifier Types
1a. The “cheat sheet addendum” has data for 5 basic amplifier types in MOS and bipolar versions. Draw a circuit diagram for each and describe briefly the strengths and weaknesses of each. b. Design a CE circuit with a gain of 100 which is “centered” in its output range in quiescence. Assume $\beta = 100, V_a = 200$.

Active Loads/Sources
2a. Consider the circuit below. What is the input resistance and gain of the first stage? b. What is the gain of the second stage?

![Circuit Diagram](image)

Figure 1: circuit for question 2

Differential Pairs
3a. Consider the circuit below. What is the input resistance? b. What is the differential gain? c. What is the Quiescent output voltage? d. What is the TOTAL power dissipation?
Figure 2: Circuit for question 3

All betas = 100

$V_{an} = 100V$