

50436



12. a) With a neat diagram explain the small signal analysis of common emitter amplifier and derive the necessary equations to calculate the voltage gain, input and output impedance.

(OR)

- b) With a neat diagram explain the operation of differential amplifier and derive the necessary equations to calculate the CMRR.

13. a) With a neat diagram explain the small signal analysis of common source amplifier with a source resistance for MOSFET.

(OR)

- b) With a neat diagram explain the source follower amplifier using MOSFET and derive the necessary equations to calculate the voltage gain, input and output resistance.

14. a) Explain the high frequency response of common emitter amplifier and derive the necessary equations to calculate the upper 3-dB frequency.

(OR)

- b) Define f_{α} and f_{β} and f_{τ} . Also derive for f_{α} , f_{β} and f_{τ} with two source terminal and one sink terminal and derive for source and sink terminal currents as a function of reference current.

15. a) Explain the basic MOSFET current steering circuit.

(OR)

- b) Explain and derive for AV for CG NMOS amplifier with following active loads
i) Diode connected enhanced PMOS.
ii) Depletion PMOS.

PART - C

(1×15=15 Marks)

16. a) Design a differential amplifier using CMOS and calculate the CMRR.

(OR)

- b) What is cascade amplifier? Explain with necessary equations and explain how to determine its bandwidth.