Transistor and Op-Amp Amplifiers: Configurations, Characteristics, and Analy

Electrical Engineering · Answer Key · 10 Questions

1. What is a key advantage of the common emitter transistor configuration?

A) High voltage and current gain
B) Low input impedance
C) High output impedance
D) No phase shift

2. In an RC-coupled amplifier, what causes the drop in gain at low frequencies?

A) Parasitic capacitances
B) Increasing reactance of coupling capacitors
C) Transistor saturation
D) Decreasing input impedance

3. What parameter is used to measure how well an op-amp rejects common-mode signals?

A) Slew Rate
B) CMRR (Common-Mode Rejection Ratio)
C) Input Offset Voltage
D) Thermal Drift

4. Which type of feedback increases overall gain and can lead to instability in op-amps?

A) Negative feedback
B) Positive feedback
C) Series feedback
D) Shunt feedback

5. What is the purpose of DC biasing in a transistor amplifier?

A) To reduce power consumption
B) To set the operating point in the active region
C) To increase voltage gain
D) To minimize distortion

6. What is the effect of Miller capacitance in high-frequency amplifier circuits?

A) Increases bandwidth
B) Decreases input capacitance
C) Increases input capacitance
D) Reduces distortion

7. What is the relationship between the collector current (Ic), base current (Ib), and beta (?) in a BJT?

A) Ic = Ib / ?
B) Ic = Ib + ?
C) Ic = ? * Ib
D) Ib = ? * Ic

8. Which amplifier class has the highest theoretical efficiency?

A) Class A
B) Class B
C) Class AB
D) Class C

9. What does slew rate indicate in op-amps?

A) Input impedance
B) Output impedance
C) Maximum rate of change of output voltage
D) Power consumption

10. What is the phase shift between the input and output signals in a common emitter amplifier?

A) 0 degrees
B) 90 degrees
C) 180 degrees
D) 360 degrees