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AEM-1 - Brainstroming Session (24EC2104)

1) Illustrate with reason how Voltage divider bias help in stabilizing the operating point of a bjt amplifier Compared fixed bias?

Ans:

Voltage divider bias stabilizes the operating point better than fixed bias.

→ The Q-point (Quiescent point) is the dc current and Voltage of a transistor when no input signal

→ It sets the starting Condition of the transistor so it can amplify signals without distortion.

– For good amplification, the Q-point should stay stable even if temperature or transistor parameter change.

Fixed bias	Voltage Divider bias
1) In fixed bias, a single Resistor R_B Connects the base of the transistor to a Voltage Source.	1) Voltage Divide bias two resistor (R_1 & R_2) to Create stable Voltage at the base, plus an emitter resistor R_E for feedback.
2) Base Current I_B depend only on R_B and V_{cc}	2) Voltage Divide $V_B = V_{cc} \cdot \frac{R_2}{R_1 + R_2}$
3) Transistor β(gain) $I_c = \beta . I_B$	3) A emitter resistence R_E Creates negitive feedback.
4) shift the Q-point,	

– Voltage Divider bias provide a more stable and reliable Q-point by using a resistive divider and negative feedback, making it much better than fixed bias of amplifier design.