

**TITLE: Common Emitter Audio Amplifier**

**STUDENT NAME: Kritish Mohapatra**

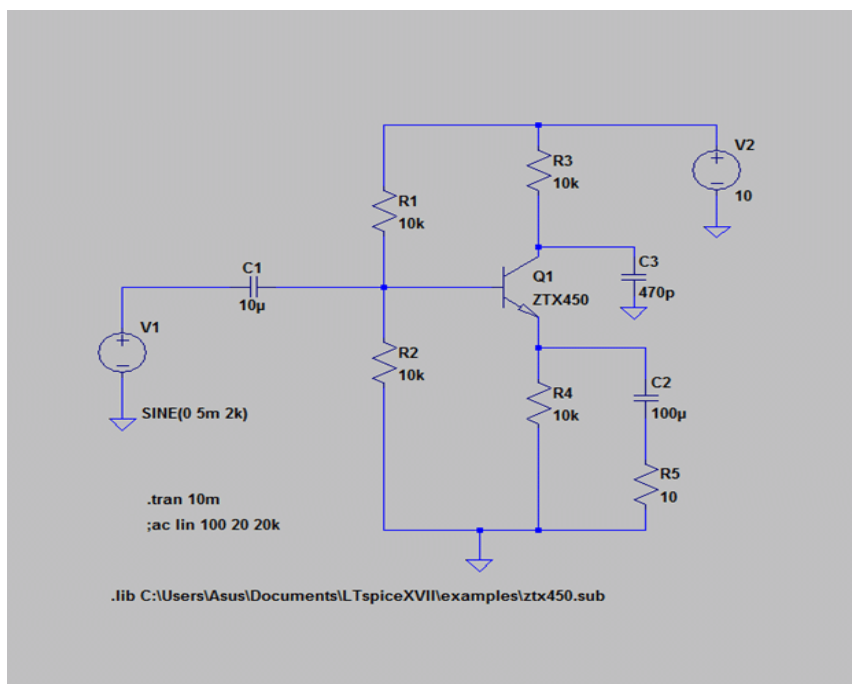
**COLLEGE: Odisha University of Technology and Research, Bhubaneswar**

**PROBLEM STATEMENT:**

A common emitter amplifier employs a NPN transistor to produce a magnified version of an input signal. Figure 1 represents circuit schematics where there are resistors (R1, R2, R3, R4 and R5), capacitors (C1 and C2), BJT (Q1), input signal source (V1) and DC voltage supply (V2). Resistors R1 and R2 perform voltage divider biasing. This reduces the effects of varying common-emitter current gain ( $h_{fe}$ ), so that amplifier will perform equally well with different transistors. Capacitor C1 ensures that only AC signal is passed. Capacitor C2 bypasses resistor R4 at high frequencies and C3 in pair with R3 work as a low-pass filter. Resistors R3 and R4 influence the collector current which in turn determines the internal resistance of the transistor. The internal resistance ( $r_e$ ) has a crucial effect on the voltage gain at high frequencies

**OBJECTIVE:**

This research proposes a common-emitter audio amplifier that enhances voltage gain, improves linearity, and reduces power consumption. The amplifier is implemented using BJT technology, demonstrating superior amplification efficiency and signal stability compared to traditional amplifier configurations.



**REFERENCES:**

[https://www.researchgate.net/publication/312218222\\_Common\\_Emitter\\_Audio\\_Amplifier](https://www.researchgate.net/publication/312218222_Common_Emitter_Audio_Amplifier)