HOLY ANGEL UNIVERSITY
College of Engineering and Architecture
DEPARTMENT OF ELECTRONICS ENGINEERING

EXPERIMENT # 8
EXPERIMENT TITLE: Common Base Amplifier

COURSE CODE: 4760
COURSE: ELECTRONIC DEVICES AND CIRCUIT THEORY LABORATORY

SCHEDULE (Day/Time/Room): Monday (1:20–4:20pm)

NAME: Alcantara, Jodi De Jesus, John Sanchez, Heluena Tan, Audrey To, Miah
GROUP No.: 6

DATE PERFORMED: April 13, 2024
DUE DATE: April 15, 2024

DATE SUBMITTED: April 15, 2024

INSTRUCTOR: Engr. Cherry Ann Navarro

SCORE SHEET

CRITERIA	SCORE
Participation (20%) [Ability to perform task in collaboration with teammates; well prepared in class; and time management skills] 1-4 Superficial 9-12 Satisfactory 17-20 Excellent 5-8 Ordinary 13-16 Very Good	
Data and Results (40%)	
Answers to Questions (15%)	
Discussion of Findings (25%) [Ability to highlight the implications of the experimental results with respect to the theoretical foundations; Analytical skill; Communication skills] 1-5 Unsatisfactory 11-15 Satisfactory 21-25 Excellent 6-10 Deficient 16-20 Very Good	
TOTAL	

INSTRUCTOR'S SIGNATURE: _____

EXPERIMENT 8

DATA AND RESULTS

Step	Result	
1	V_E	0.94 V
	I_E	0.94 mA
	R'_e	27.4 Ω
2	V_{in}	10 V
	Phase Relationship	Out-phase
	V_o	9.65 V
	A_{Vo}	9.78 V
3	Z_o	770 Ω
5	V_s	5 V
	A_v	0.21
6	r_s	98 Ω
	Z_{in}	8200 Ω
7	$V_{L(pk\text{-}topk)distorted}$	9 V

REVIEW QUESTIONS

1. Does the input resistance of a common-base amplifier, high or low?
2. Is it possible to have a same voltage gain for a common-base and common emitter amplifier?
3. What is the maximum current gain in a common-base amplifier?

Answers to Review Questions

1. It is typically low
2. Because of the variations in their circuit designs and operating theories, common-base and common-emitter amplifiers typically cannot achieve the same voltage gain.
3. In a common-base amplifier, the maximum current gain is one; however, in real-world circuits, this value may differ somewhat because of component tolerances and parasitic effects.

BASIC ELECTRONICS

DISCUSSION OF FINDINGS:

The voltage divider bias experiment on the common-base amplifier produced a number of important conclusions about its performance attributes. The ratio of the output voltage to the input voltage when the amplifier was not loaded was first ascertained by measuring the open-circuit voltage gain, or AVo. This parameter gives information about the amplification capacity. second, an evaluation of the output impedance (Zo) was conducted in order to comprehend the resistance as one looks backward into the amplifier's output stage. this measurement aids in determining how well the amplifier can drive loads or following stages. In order to understand how the amplifier behaves when connected to actual signal sources and loads, other factors were also calculated, including the loaded voltage gain from source-to-load (VL/Vs) and the input impedance (Z_{in}). Understanding the amplifier's performance in real-world applications depends on these parameters. the frequency and amplitude of the signal generator were changed during the experiment to track variations in the amplifier's behaviour. Additionally, distortion was observed beyond a specific amplitude of the input signal, demonstrating the limits of the linear operation of the amplifier. To sum up, the results of the experiment highlight how crucial it is to comprehend the many characteristics and actions of the common-base amplifier in order to effectively apply it in real-world electrical circuits. The measured values enable well-informed design decisions and optimisations by offering insightful information about the amplifier's performance under various operating situations.