

EXPERIMENT NUMBER 5 Investigate the characteristics of diodes and transistors	GROUP 10	Trần Minh Quân-19151078
	DATE	22/04/2022
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	REPORT DATE	
	GRADING	

Purpose:

- About knowledge: State the measurement method and the steps to conduct the experiment
- Test to determine the characteristics of Diode and Transistor.
- About skills: Fluently use measuring tools, follow the correct procedure
- Experiment yourself to get accurate data.
- Attitude: Careful, persistent, accurate, honest, objective.

I. Measuring Instruments

Experimental equipment includes:

- Physics experiment kit BKE-050 or MC-95.7
- Diode (silicon) and transistor (nnp)
- 820Ω and $100k\Omega$ resistors
- Set of wiring harnesses (7 wires)
- Power supply 220VAC

II. Draw the Volt-Ampere characteristic curve of the diode

a) Data Table 1

- Accuracy level of voltmeter: $k_v =$
- Voltmeter scale: $U_m =$
- The smallest division of the voltmeter scale: $\omega_v =$
- Accuracy class of Ampere meter: $k_A =$
- Ampere meter scale: $I_m =$
- The smallest division of the Ampere meter scale: $\omega_A =$

U (V)											
I (mA)											

b) Draw the characteristic $I = f(U)$ of the semiconductor diode

U (V)											
I (mA)											

III. Draw characteristic curve $I_C = f(U_{CE}, I_B)$ of transistor

a) Data table 2

- Accuracy level of voltmeter: $k_v =$
- Voltmeter scale: $U_m =$
- The smallest division of the voltmeter scale: $\omega_v =$
- Accuracy class of Ampere meter 1: $k_{A1} =$
- Ampere meter scale 1: $I_{1m} =$
- The smallest division of the Ampere meter scale 1: $\omega_{I1} =$
- Accuracy class of Ampere meter 2: $k_{A2} =$
- Ampere meter scale 2: $I_{2m} =$
- The smallest division of the Ampere meter scale 2: $\omega_{I2} =$
- $\rightarrow \Delta U =$
- $\rightarrow \Delta I_1 =$
- $\rightarrow \Delta I_2 =$

[illegible]

b) Graph $I_C = f(I_B)$ and $I_C = f(U_{CE})$ on the same coordinate system

c) From the graph, determine the current gain of the transistor:

$$\beta = \operatorname{tg} \alpha = \frac{I_{Ci} - I_{Cj}}{I_{Bi} - I_{Bj}}$$

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d) Calculate the errors of β

- Write measurement results $\beta = \beta \pm \Delta\beta$:

- Comment on measurement results: