Expriment 1
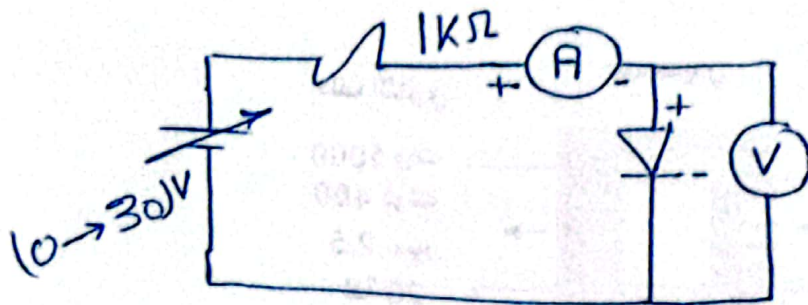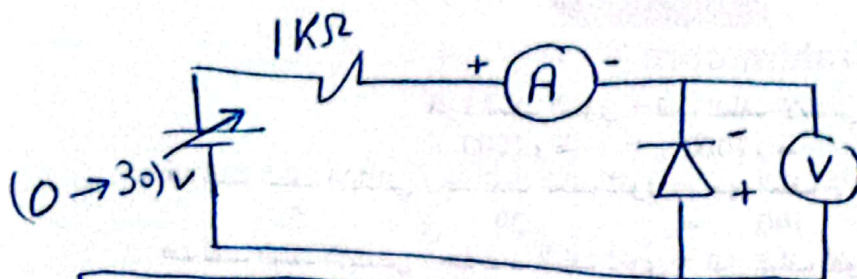
الاسم (Name) / V-I Charactristics
of diode

الهدف (PurPose)
(Aim)   / realtion between

Voltage and Current in Diodes
by applying Voltage across it
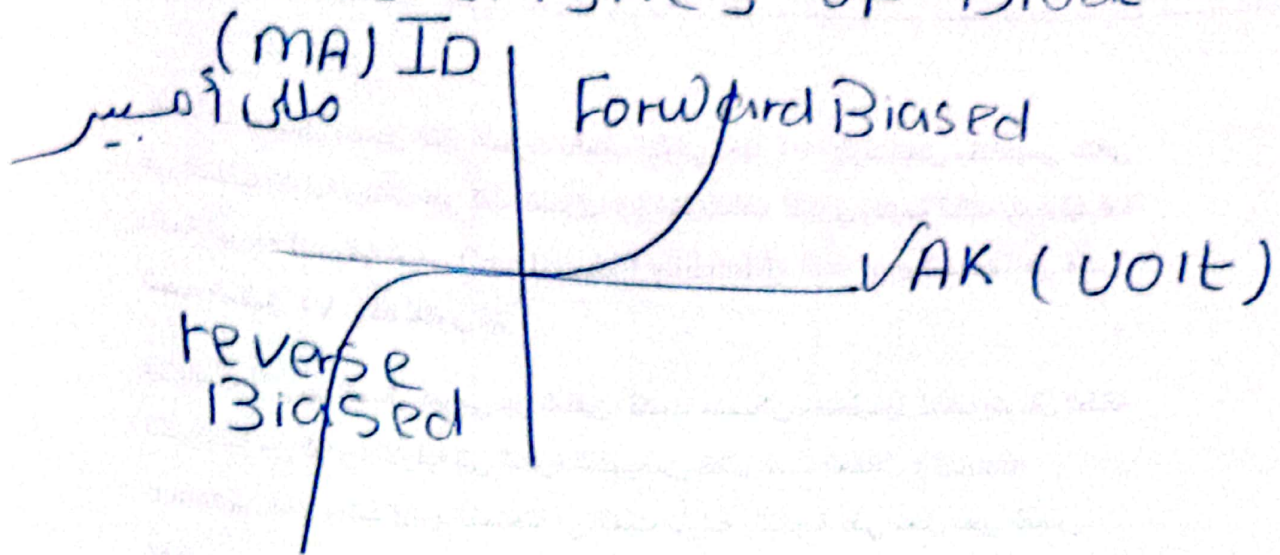and measuring the Current through
it

Forward
Biased

reverse
Biased

VAK	I(mA)
0.1	0
0.2	0
0.3	0
0.4	0
0.5	0
0.6	1.5
0.7	8.8

Forward Biased

VAK	I(mA)
-10	1
-15	1.5
-20	2
-25	2.5
-30	3
-35	3.5
-40	4

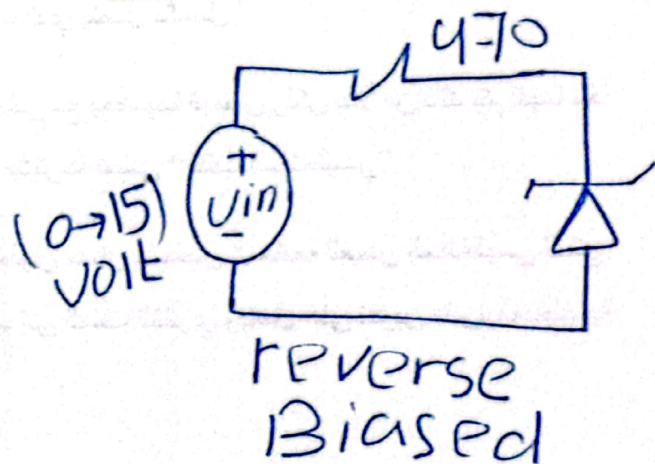reverse Biased

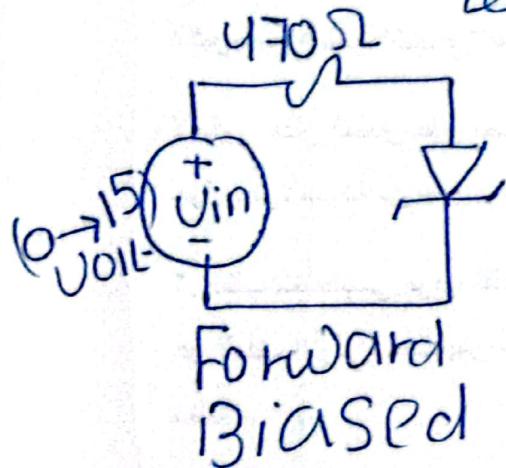# V-I Characteristics of Diode

Experiment 2

الاسم / Zener I-V Characteristics
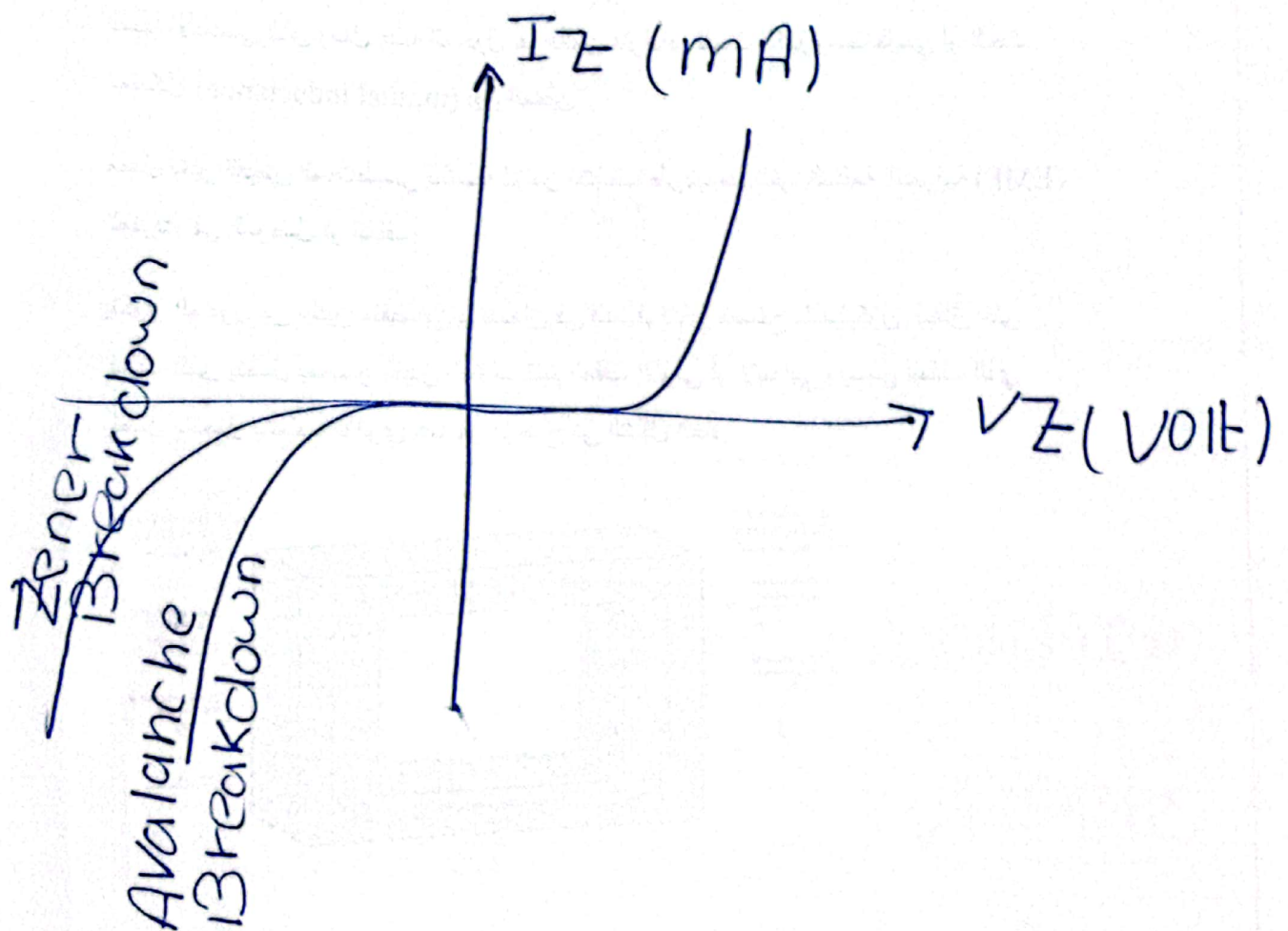
الهدف / ① obtain I-V Characteristics of Zener Diode

② study Zener Diode as a voltage regulator

③ Calculate % Line and Load Regulation

Forward Biased

reverse Biased

V_Z	I_Z
1 v	0 mA
2 V	0 mA
3 V	0 mA
4 V	0 mA
5.09 V	2.12 mA
5.15 V	5 mA
6	7 mA

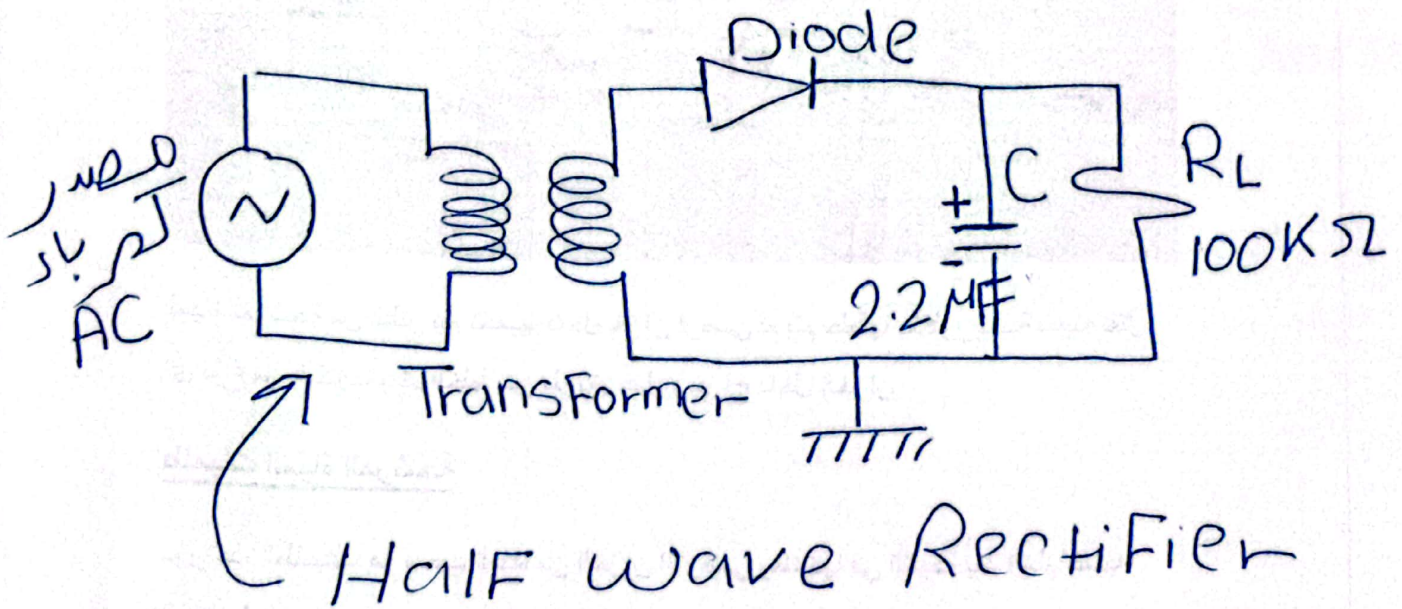I_Z (mA)

V_Z (volt)

Zener
Breakdown

Avalanche
Breakdown

EXPriment (3)

الاسم / RectiFier Circuits

الهدف /* operation oF 3 diFFerent
diode rectiFier Circuits :-
① HalF wave RectiFier
② Center tapped Fullwave
  RectiFier
③ Bridge Full wave RectiFier

* operation oF CaPacitor Filter
  Connected to output oF
  rectiFier

Half wave RectiFier

$$Vdc = VoPeak - \frac{VriPPle}{2}$$

$$VriPPle = \frac{VoPeak}{F \, R_L \, C}$$

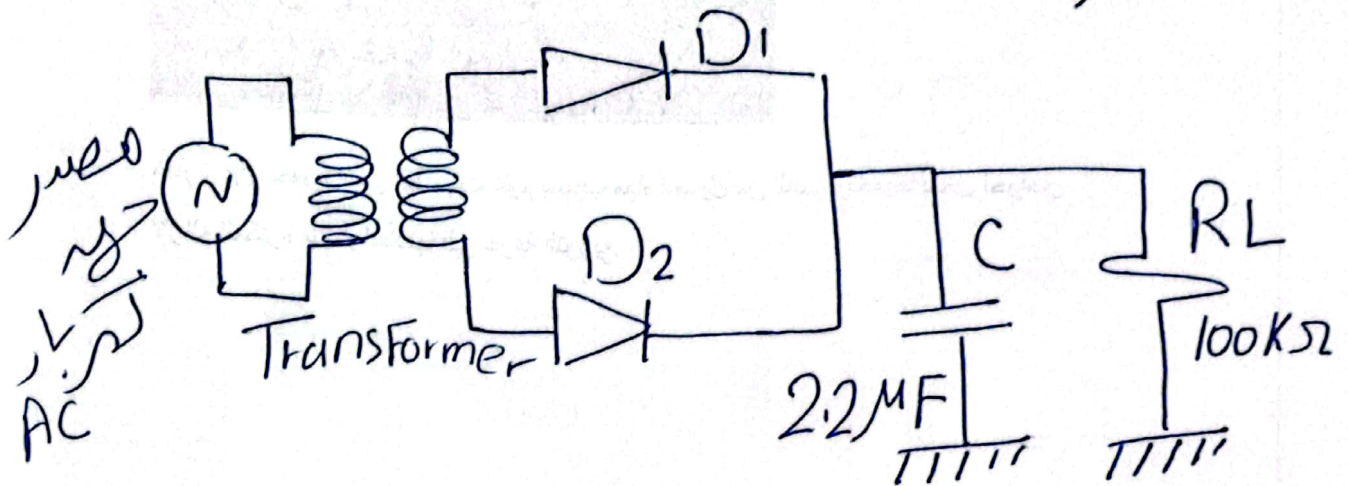$$V_0 \text{Peak} = \sqrt{2} \times V_0 \text{r.m.s}$$

$$= \sqrt{2} \times 12 \quad \text{Voll}$$

$$R_L = 100 \times 10^3 \, \Omega$$

$$C = 2.2 \times 10^{-6} \, F$$

$$F = 50 \, Hz$$

Full wave Rectifier
(center tapped)

$$V_{dc} = V_0 \text{Peak} - \frac{V \text{ripple}}{2}$$

$$V \text{ripple} = \frac{V_0 \text{Peak}}{2 F R_L C}$$

$$V_0 \text{Peak} = \sqrt{2} \times 12 \text{ volt}$$
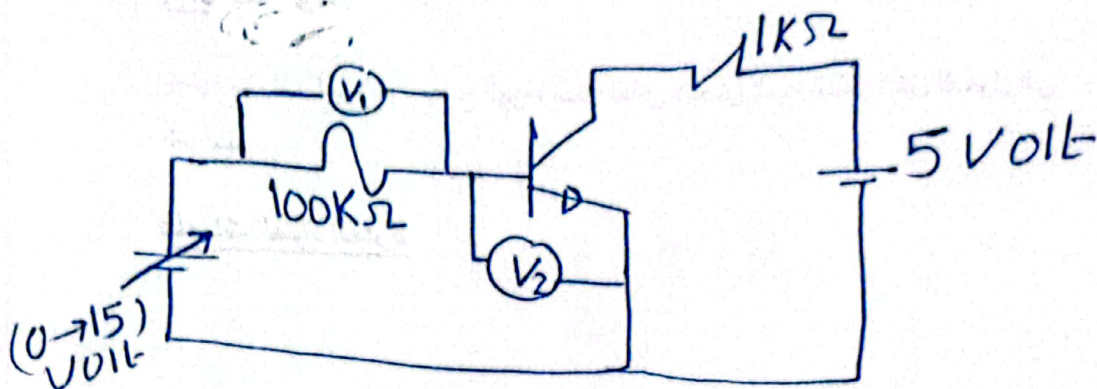
$$F = 50 Hz$$

$$R_L = 100 \times 10^3 \Omega$$

$$C = 2.2 \times 10^{-6} F$$

Expriment (4)

الاسم / The input & output characteristics of Common Emitter of BJT

الهدف / Study the characteristics of Common Emitter of BJT and How to Control flow of current.

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input Characteristic

VBE (V₂)	VB (100KΩ) (V₁)	IB
0.55V	0.1 V	0.1 MA
0.65 V	0.5 V	0.5 MA
0.68V	2.4V	2.4 MA
0.71V	7.5V	7.5 MA

$$\text{مقاومة الدخل} = r\,input = \frac{\Delta VBE}{\Delta IB} = \frac{0.65-0.55}{(0.5-0.1)\times 10^{-6}}$$ مقاومة + Ω

Out Put Characteristic
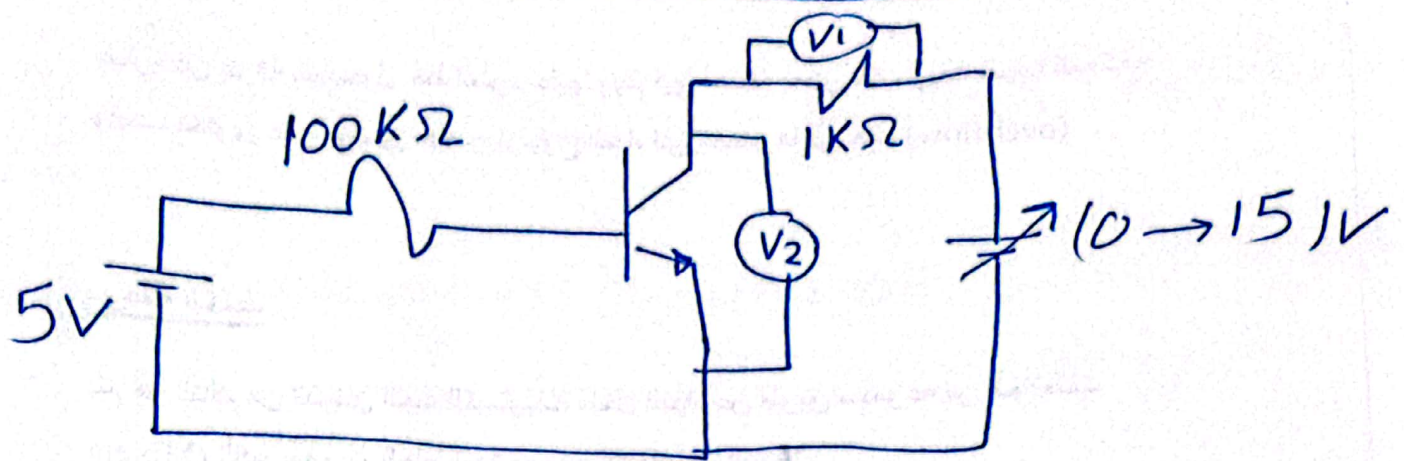
VCE (V₂)	V₁	IC
0·1 V	4V	4mA
0·2 V	10V	10mA
0·75V	14V	14mA

$$r_{outPut} = \frac{\Delta V_{CE}}{\Delta I_C}$$

المقاومه الخرج

$$= \frac{0.2 - 0.1}{(10 - 4) \times 10^{-3}}$$

$$= \checkmark\checkmark\ \Omega$$

EXPriment(5)

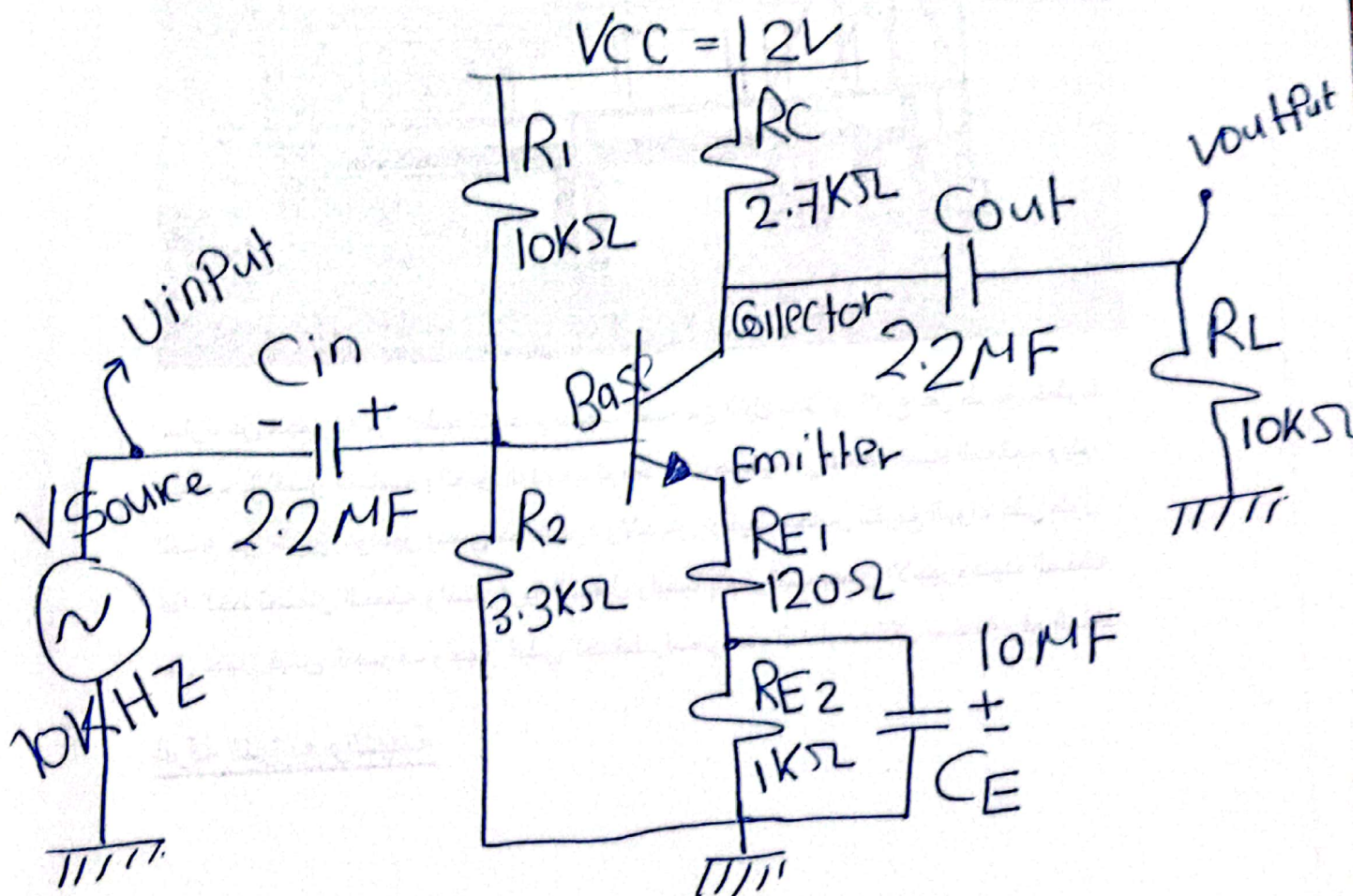## الاسم/ The Common Emitter AmpliFier

الهدف/

① Study oPeration oF small signal Common Emitter AmPliFier

② estimate the Factors that inFluence the Voltage gain

③ determine the inPut and outPut impedence

VCC = 12V

R_1 10KΩ R_C 2.7KΩ   Cout 2.2MF   Voutput

Vinput   Cin   Collector   RL 10KΩ

Vsource   2.2MF   Base   Emitter

10VHZ R_2 3.3KΩ RE_1 120Ω

RE_2 1KΩ C_E 10MF

Vin P-P	Vout with RL	Vout without RL	gain with RL	gain without RL
0.1V	1.2 V	3 V	$\dfrac{Vout}{Vin}$ $\dfrac{1.2}{0.1} = 12$	$\dfrac{3}{0.1} = 30$