

EXPERIMENT NUMBER – 3.10

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UID:21BCS11270

BRANCH: PHYSICS FOR ENG.

DOP: 01/06/2022

SUBJECT: FOCP

GRP: 510 B

- AIM OF THE EXPERIMENT – TO PLOT A GRAPH CONNECTING PHOTOCURRENT AND APPLIED POTENTIAL

- APPARATUS-

1. TARGET MATERIAL
2. LIGHT SOURCE
3. VOLTMETER
4. AMMETER
5. CONNECTING WIRES

- OBSERVATIONS-

1. MATERIAL:- COPPER
2. AREA OF PLATE:- 0.3cm^2

- CASE 1:- WHEN INTENSITY IS CONSTANT AND WAVELENGTH IS CHANGING.

INTENSITY= 10 w/m^2

WE WILL BE TAKING VALUES OF VOLTAGE AND CURRENT AT 3 DIFFERENT VALUES OF WAVELENGTH.

CASE 1:

WAVELENGTH = 140 nm

SR. NO.	APPLIED VOLTAGE(V)	CURRENT(MICRO A)
1.	0V	12.51mA
2.	-0.50V	11.01mA
3.	-1.00V	9.51mA
4.	-1.50V	8.01mA
5.	-2.00V	6.51mA

CASE 2:

WAVELENGTH = 170 nm

SR. NO.	APPLIED VOLTAGE(V)	CURRENT(mA)
1.	0V	7.81mA
2.	-0.50V	6.31mA
3.	-1.00V	4.81mA
4.	-1.50V	3.31mA
5.	-2.00V	1.81mA

CASE 3:

WAVELENGTH = 220 nm

SR. NO.	APPLIED VOLTAGE(V)	CURRENT(mA)
1.	0V	2.99mA
2.	-0.20V	2.39mA
3.	-0.50V	1.49mA
4.	-0.90V	0.29mA
5.	-1.00V	0.00mA

CASE 2:- WHEN WAVELENGTH IS CONSTANT AND INTENSITY IS CHANGING.

WAVELENGTH= 100 nm

WE WILL BE TAKING VALUES OF VOLTAGE AND CURRENT AT 3 DIFFERENT VALUES OF WAVELENGTH.

CASE 1:

INTENSITY = 5 w/m²

SR. NO.	APPLIED VOLTAGE(V)	CURRENT(mA)
1.	0V	11.57mA
2.	-1.80V	8.87mA
3.	-3.00V	7.07mA
4.	-5.50V	3.32mA
5.	-7.70V	0.02mA

CASE 2:

INTENSITY = 15 w/m²

SR. NO.	APPLIED VOLTAGE(V)	CURRENT(mA)
1.	0V	34.72mA
2.	-1.80V	26.62mA
3.	-3.00V	21.22mA
4.	-5.50V	9.97mA
5.	-7.70V	0.07mA

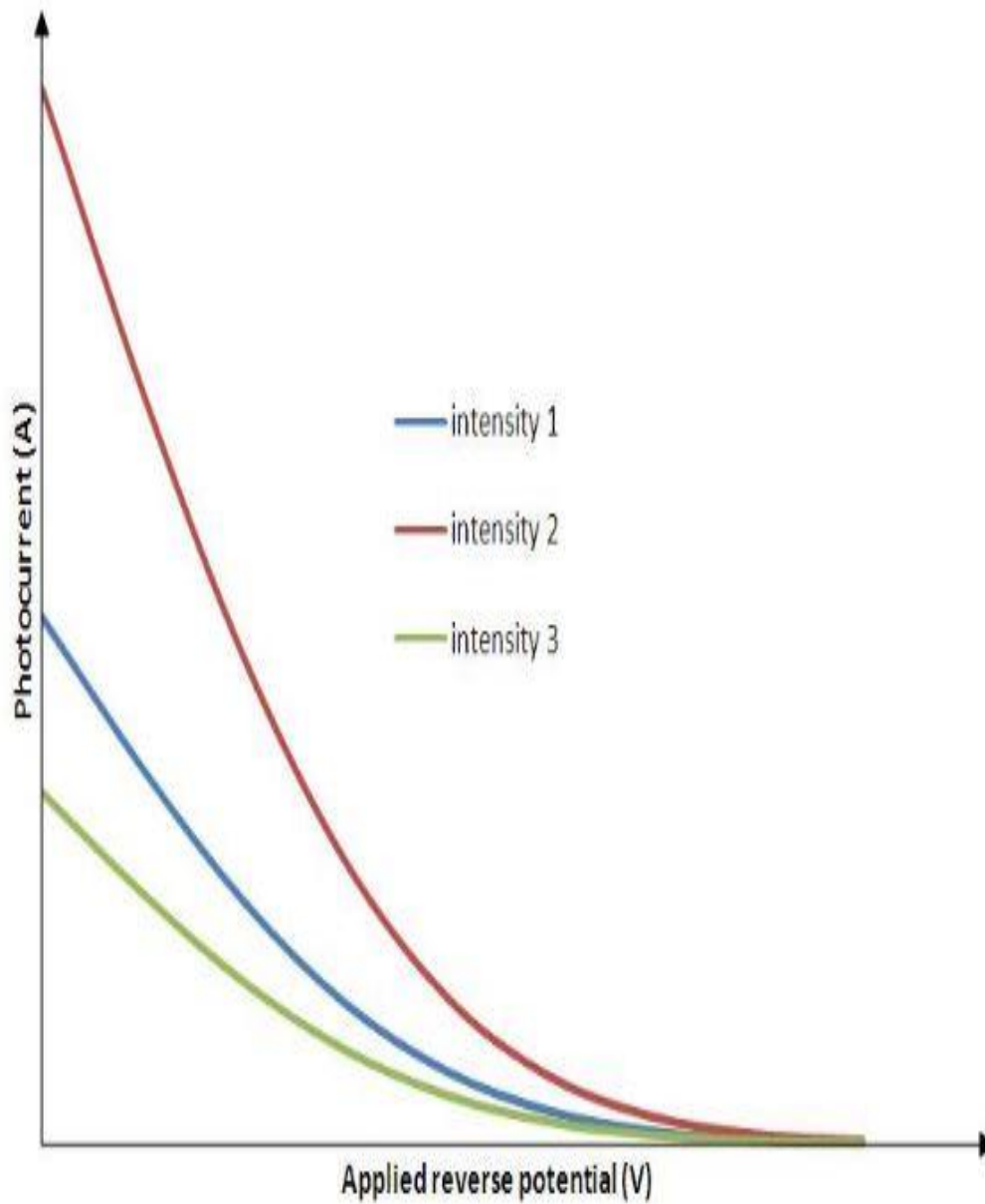
CASE 3:

INTENSITY = 25 w/m²

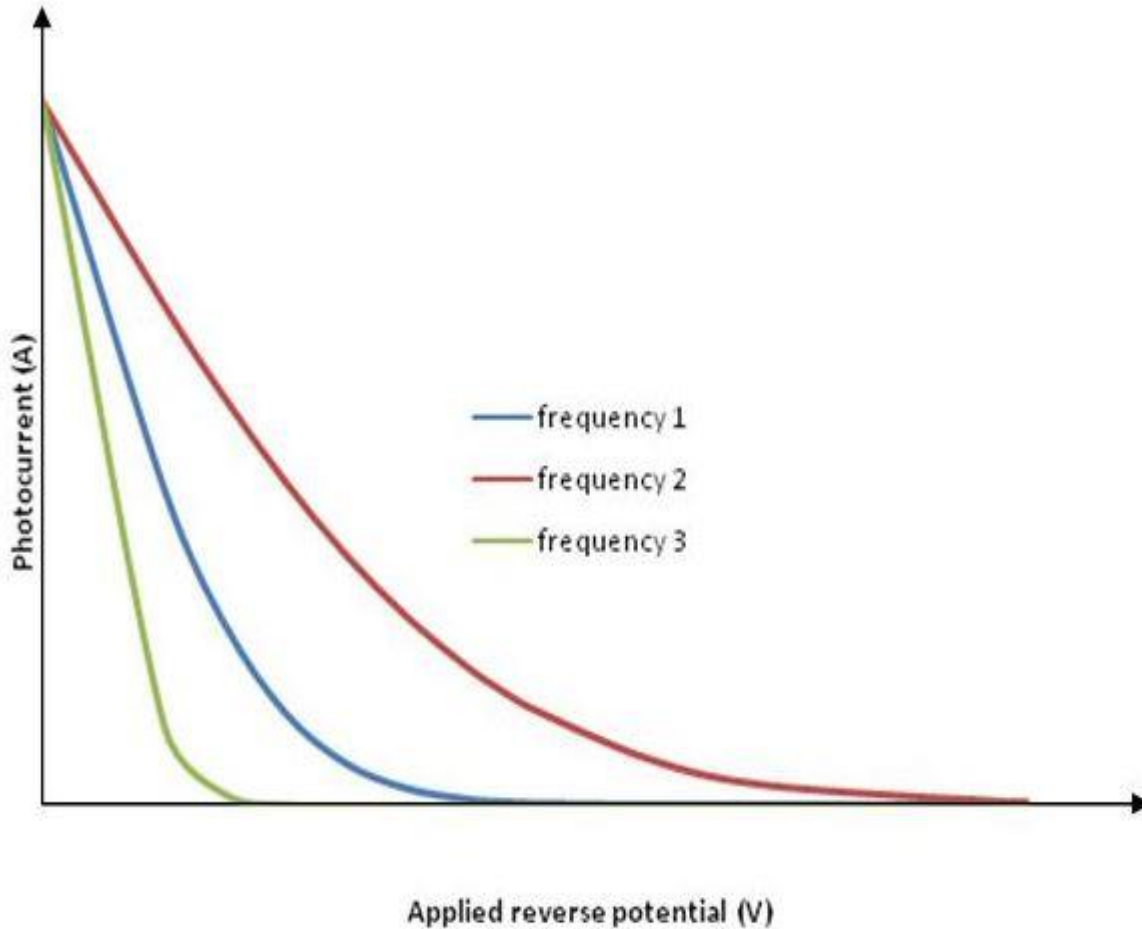
SR. NO.	APPLIED VOLTAGE(V)	CURRENT(A)
1.	0V	57.87mA
2.	-1.80V	44.37mA
3.	-3.00V	35.37mA
4.	-5.50V	16.62mA
5.	-7.70V	0.12mA

- GRAPH (ATTACH IF ANY)-

- CASE 1: WHEN WAVELENGTH IS CONSTANT.



- CASE 2: WHEN INTENSITY IS CONSTANT.



- RESULTS AND DISCUSSION-

Plot graph between photocurrent and applied reverse voltage. The energy in light comes in small packets. Each of these packets is called a quantum of energy or a photon. ... From this representation it becomes clear that the low wavelength photons have high energy while the high wavelength photons have relatively low energy.

● LEARNING OUTCOMES

1. Remember the concepts related to fundamentals of C language, draw flowcharts and write algorithm/pseudocode.
2. Understand the way of execution and debug programs in C language.
3. Apply various constructs, loops, functions to solve mathematical and scientific problem.
4. Analyze the dynamic behavior of memory by the use of pointers.
5. Design and develop modular programs for real world problems using control structure and selection structure.

EVALUATION COLUMN (To be filled by concerned faculty only)

<u>Sr. No.</u>	<u>Parameters</u>	<u>Maximum Marks</u>	<u>Marks Obtained</u>
1.	Worksheet Completion including writing learning objective/ Outcome	10	
2.	Post-Lab Quiz Result	5	
3.	Student engagement in Simulation/ Performance/ Pre-Lab Questions	5	
4.	Total Marks	20	