

A Practical activity Report submitted  
for Engineering Design Project-II (UTA-024)

by

**Name of student**

**Roll number**

**Submitted to**

**Dr. ....**



**THAPAR INSTITUTE**  
OF ENGINEERING & TECHNOLOGY  
(Deemed to be University)

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING**  
**THAPAR INSTITUTE OF ENGINEERING AND TECHNOLOGY, (A**  
**DEEMED TO BE UNIVERSITY), PATIALA, PUNJAB**

**INDIA**

**July-Dec 2021**

**NOTE:** Select an appropriate objective only from the following list of experiments while making a softcopy of your report.

**TABLE OF CONTENT**

<b>Sr. No.</b>	<b>Experiment no.</b>	<b>Objective</b>
<b>1</b>	<b>1 (a)</b>	To draw a schematic diagram of pulse width modulation (PWM) based transmitter for generating specified pulse width waveforms for gantries placed at different locations on the path using CAD tool (Eagle).
<b>2</b>	<b>1 (b)</b>	To design a printed circuit board layout of pulse width modulation (PWM) based transmitter circuit using CAD tool (Eagle).
<b>3</b>	<b>2 (a)</b>	To draw a schematic diagram of receiver to receive specified pulse width IR signals from gantries using CAD tool (Eagle).
<b>4</b>	<b>2(b)</b>	To design a printed circuit board layout of receiver circuit using CAD tool (Eagle).
<b>5</b>	<b>3 (a)</b>	To draw a schematic diagram of IR sensor module circuit (required to move Buggy module on a predefined the path) using CAD tool (Eagle).
<b>6</b>	<b>3 (b)</b>	To design a printed circuit board layout of IR sensor module circuit using CAD tool (Eagle).
<b>7</b>	<b>4</b>	To solder and test a pulse width modulation (PWM) based transmitter circuit (for gantries placed at different locations on the path to be followed by Buggy robot) on a printed circuit board (PCB).
<b>8</b>	<b>5</b>	To solder and test pulse width modulation (PWM) based receiver circuit (to receive IR signals from gantries connected to transmitter circuit) on a printed circuit board (PCB).
<b>9</b>	<b>6</b>	To solder and test an IR sensor module circuit (which helps Buggy robot to move on a predefined path) on a printed circuit board (PCB).

## Experiment: 1

### Objective:

- (a) To draw a schematic diagram of pulse width modulation (PWM) based transmitter for generating specified pulse width waveforms for gantries placed at different locations on the path using CAD tool (Eagle).
- (b) To design a printed circuit board layout of pulse width modulation (PWM) based transmitter using CAD tool (Eagle).

**Software Used:** Eagle Software

### Component Used:

Sr. No	Name of Components	Value	Specifications
1.	Resistor	220 $\Omega$	Carbon Resistor with 5% Tolerance
2.	Capacitor	1000nF	Electrolytic Capacitor
3.	Capacitor	10nF	Electrolytic Capacitor
4.	DCJ0202		DC Power Jack
5.	HLMP6	5V	Dome Lamp
6.	IC 78L05Z	+5V	Positive Voltage Regulator
7.	22-23-2031		PCB Header
8.	PIC12F629		Microcontroller

### Theory :

1. **Resistor:** Resistors are electronic components .....

**NOTE:** Explain the component in your way of writing without plagiarism. You may take help from internet and contents should not match to other reports.



**Fig. 1.1** Various types of resistors

(NOTE: Do not copy this image, select other image from internet)

2. **Capacitor**: The capacitor is a component which .....

**NOTE:** Explain the component in your way of writing without plagiarism. You may take help from internet and contents should not match to other reports. .



Fig. 1.2 Various types of capacitors

(NOTE: Do not copy this image, select other image from internet)

3. **HLMP6**: HLMP 6 is a sub miniature standard red LED lamp in .....

**NOTE:** Explain the component in your way of writing without plagiarism. You may take help from internet and contents should not match to other reports.



Fig. 1.3 Various types of sub miniature standard LED

(NOTE: Do not copy this image, select other image from internet)

4. **IC 78L05Z**: 78L05Z is a fixed positive voltage regulator.....

**NOTE:** Explain the component in your way of writing without plagiarism. You may take help from internet and contents should not match to other reports.

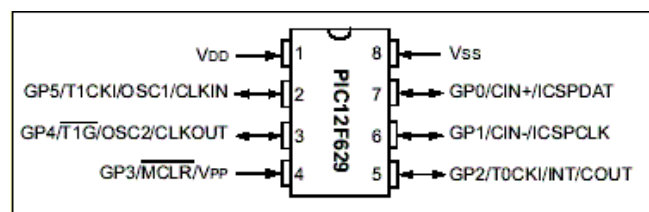


**Fig. 1.4** Voltage regulator 78L05Z

**(NOTE: Do not copy this image, select other image from internet)**

5. **PIC12F629**: PIC12F629 is a powerful easy to program CMOS.....

**NOTE:** Explain the component in your way of writing without plagiarism. You may take help from internet and contents should not match to other reports.



**Fig. 1.5** IC PIC12F629

**(NOTE: Do not copy this image, select other image from internet)**

**NOTE:** Explain the component in your way of writing without plagiarism. You may take help from internet and contents should not match to other reports.

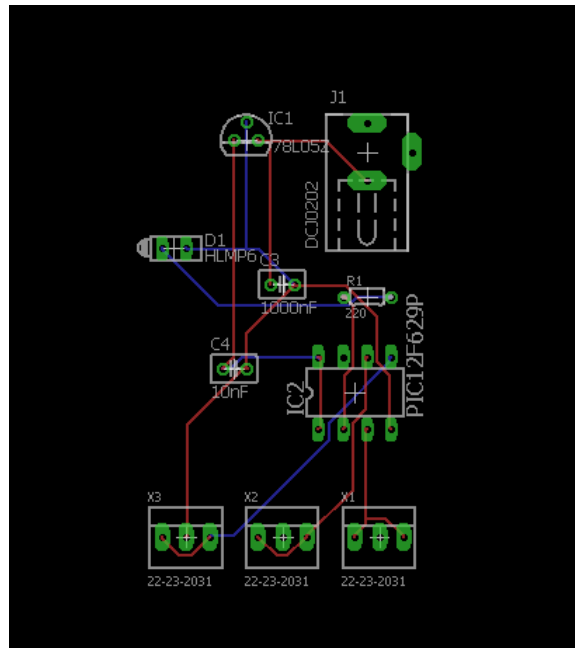


**(Do not copy this image, select other image from internet)**

**NOTE:** Explain the component in your way of writing without plagiarism. You may take help from internet and contents should not match to other reports.

**(NOTE: Do not copy this image, paste your simulated schematic diagram)**

## Printed Circuit Board layout:



**Fig. 1.8** PCB layout of Transmitter circuit

**(NOTE: Do not copy this image, paste your simulated PCB layout diagram)**

## Discussion:

In this experiment, we have learnt how .....

**NOTE: Discuss this experiment in your way of writing without plagiarism.**

**Signature of Faculty member**