**CHAPTER 3**

**SYSTEM DESIGN**

**3.1. Robotic Arm Design**

The design part is divided into two parts; the mechanical part design and the mechanical part installation. In the design of the mechanical part, the Corel Draw drawings of the parts to be used in robotic arm construction were made through the help program. In the installation of the mechanical part, the naming of the servo motors used in the robotic arm and the tasks during the operation of the robotic arm are explained. The construction of the several steps. These steps are; Determination of the mechanical materials required for the production of the thesis,

* Determination of microcontroller and software to be used in the thesis
* Search and selection of servo motors that will run the robotic arm in a proper way
* Proper selection of mechanical parts
* Implementation of robotic arm assembly
* Testing the system to see if it works properly with the microcontroller and controller application
* Possible faults have been given in the form of restructuring the system by passing through the eye.

These steps have been completed and the Robotic arm design.

3.1.1. Five degrees of freedom

Serial and parallel manipulator system are generally designed to position end-effector with five-degrees of freedom, consisting of three in translation and two in orientation. This provides a direct relationship between actuator positions and the configuration of the manipulator.

Robotic arms are desired by five degrees of freedom. This number typically refers to the number of single-axis rotational points in the arm, where higher number indicates an increased flexibility in positioning a tool. The grabbing mechanism is not considered