AGRICULTURE ROBOT

ABSTRACT

The aim of this project is to design an Agriculture Robot which is highly qualified in work as ploughing, seeding and watering which can do all the three things one by one at a time. This reduces man power and saves time.

A robot is a mechanical or virtual artificial agent. In practice, it is usually an electro-mechanical system which, by its appearance or movements, conveys a sense that it has intent or agency of its own. The word robot can refer to both physical robots and virtual software agents, but the latter are usually referred to as Robots. There is no consensus on which machines qualify as robots, but there is general agreement among experts and the public that robots tend to do some or all of the following: move around, operate a mechanical arm, sense and manipulate their environment, and exhibit intelligent behavior, especially behavior which mimics humans or animals.

This project is built on an electro mechanical structure which is controlled by a PC through ZIGBEE 2.4 GHz wireless communication. The robot plays a vital role in this project by doing the dedicated works of plowing, seeding and watering the field. The system is driven on geared motors which serve the purpose of rotating the wheels and the seed drum which contains the seeds. The movements of the robot are governed by the microcontroller, by the commands it receives from the ZIGBEE module. However we also use a serial line driver IC: MAX232 between the ZIGBEE transceiver and the microcontroller to translate the voltage levels, which makes both the modules to communicate with each other. The system is also provided with a water drum, which contains water and a sprinkler. The plough, sprinkler and the seed drum are housed on a rack behind the vehicle which can be adjusted up and down by a lever mechanism.

This project uses regulated 5V, 500mA power supply. Unregulated 12V DC is used for relay. 7805 three terminal voltage regulator is used for voltage regulation. Full wave bridge rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.
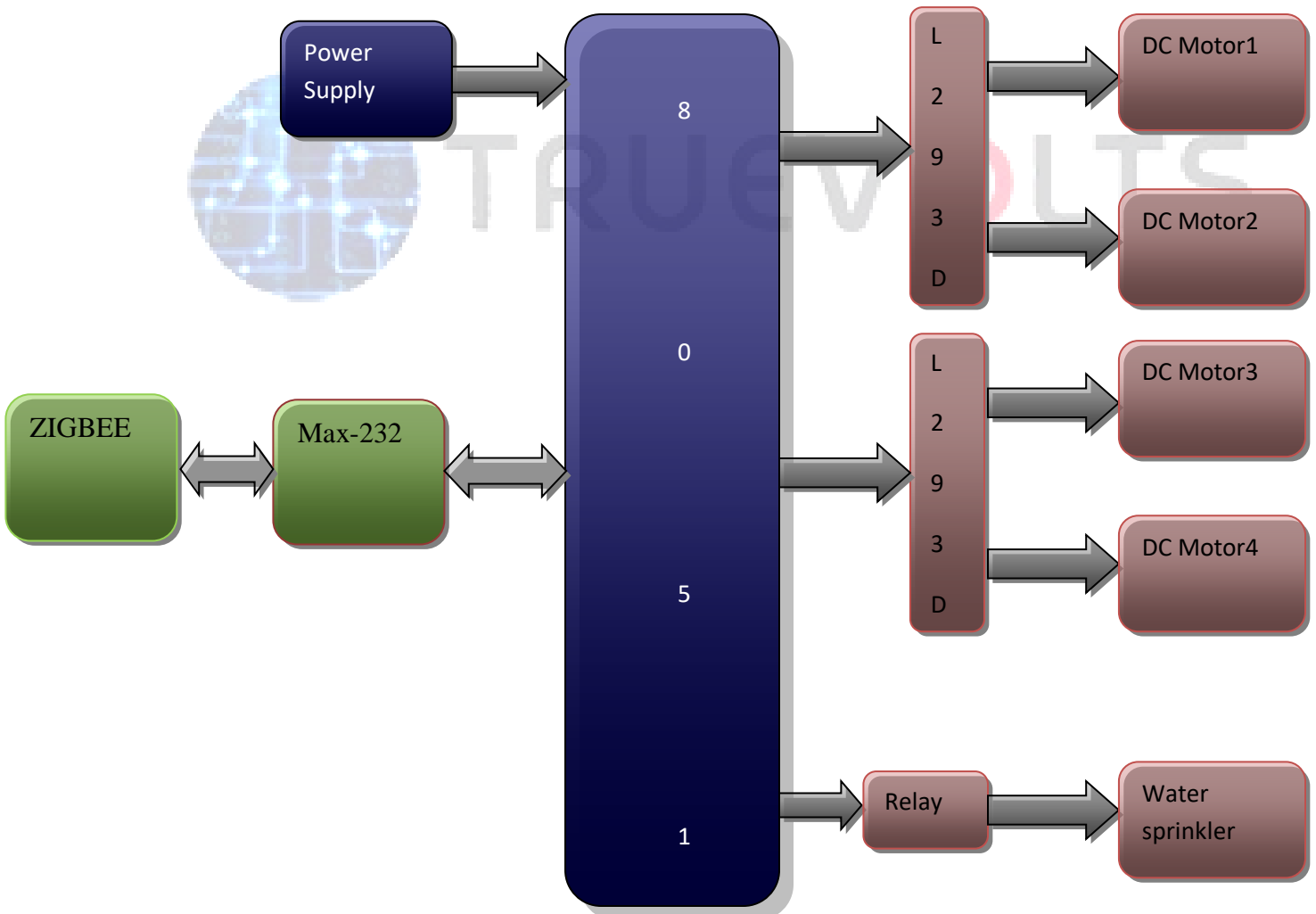
APPLICATIONS:

- ➢ Robotics
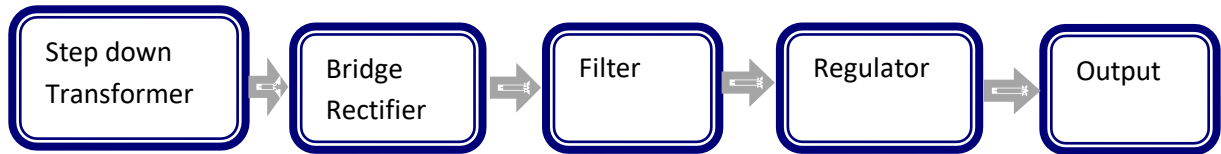- ➢ Automatic control systems

BLOCK DIAGRAM:

TRNSMITTER SECTION:

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ZIGBEE  ⟷  Max-232  ⟷  PC
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RECEIVER SECTION:

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Power Supply ──▶ [L293D 8]  ──▶  L293D  ──▶ DC Motor1
                                          ──▶ DC Motor2
ZIGBEE ⟷ Max-232 ⟷ [89C51 0]  ──▶  L293D  ──▶ DC Motor3
                                          ──▶ DC Motor4
                   [51]  ──▶  Relay  ──▶  Water sprinkler
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POWER SUPPLY BLOCKDIAGRAM:

| Step down Transformer | → | Bridge Rectifier | → | Filter | → | Regulator | → | Output |