MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION

ZEAL EDUCATION SOCIETY'S

ZEAL POLYTECHNIC

MICRO PROJECT

Academic year: 2021-22

TITLE OF PROJECT

Prepare Chart and PPT on Capacitor and Inductor containing its construction, Diagram, Working, Advantages, Disadvantages and Application

Program: Computer Eng. Program code: CO

Course: Element Electrical Engineering

Course code: 22215

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION

Certificate

This is to certify that Mr. /Ms. ……

Roll No. …….. of **II** Semester of Diploma in ……..

……of Institute, ZEAL POLYTECHNIC (Code: 0988) has completed the **Micro Project** satisfactorily in Subject – **Business Communication Using Computers (22009)** for the academic year 2021- 2022 as prescribed in the curriculum.

Place: …… Enrollment No: ……..

Date: …… Exam. Seat No: ……..

Subject Teacher **Head of the Department** **Principal**

Group Details:

Sr.No	Name of group members	Roll No	Enrollment No	Seat No
1	Nikam Harshad Jalindar	66	2209880305	
2	Ingale Om Hemchandra	67	2209880246	
3	Yadav Athrava Sanjay	68	2209880390	
4	Baile Parshuram Navnath	69	2209880197	

Name of Guide: Ayesha .D. Pachghare

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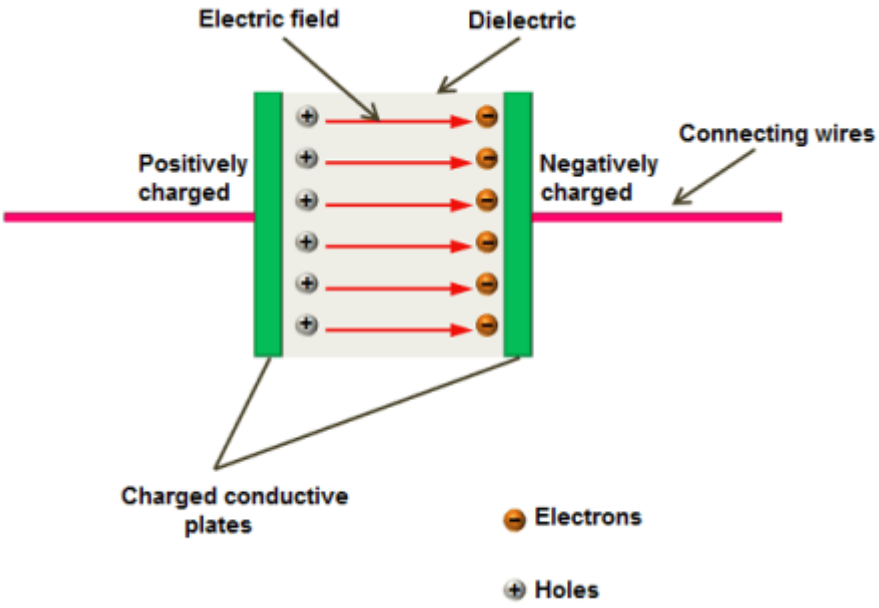
PROJECT ABSTRACT :

The current strategies for making electronic devices are generally time, water, material and energy consuming. Here, the direct writing of composite functional circuits through comprehensive use of GaIn10-based liquid metal inks and matching material is proposed and investigated, which is a rather easy going and cost effective electronics fabrication way compared with the conventional approaches. Owing to its excellent adhesion and electrical properties, the liquid metal ink was demonstrated as a generalist in directly making various basic electronic components such as planar resistor, inductor and capacitor or their combination and thus composing circuits with expected electrical functions. For a precise control of the geometric sizes of the writing, a mask with a designed pattern was employed and demonstrated. Mechanisms for justifying the chemical components of the inks and the magnitudes of the target electronic elements so as to compose various practical circuits were disclosed. Fundamental tests on the electrical components including capacitor and inductor directly written on paper with working time up to 48 h and elevated temperature demonstrated their good stability and potential widespread adaptability especially when used in some high frequency circuits. As the first proof-of-concept experiment, a typical functional oscillating circuit including an integrated chip of 74HC04 with a supply voltage of 5 V, a capacitor of 10 nF and two resistors of 5 kΩ and 1 kΩ respectively was directly composed on paper through integrating specific electrical elements together, which presented an oscillation frequency of 8.8 kHz. The present method significantly extends the roles of the metal ink in recent works serving as only a single electrical conductor or interconnecting wires. It opens the way for directly writing out complex functional circuits or devices on different substrates. Such circuit composition strategy has generalized purpose and can be extended to more areas, even daily pervasive electronics.

CONTENT:

Capacitor:

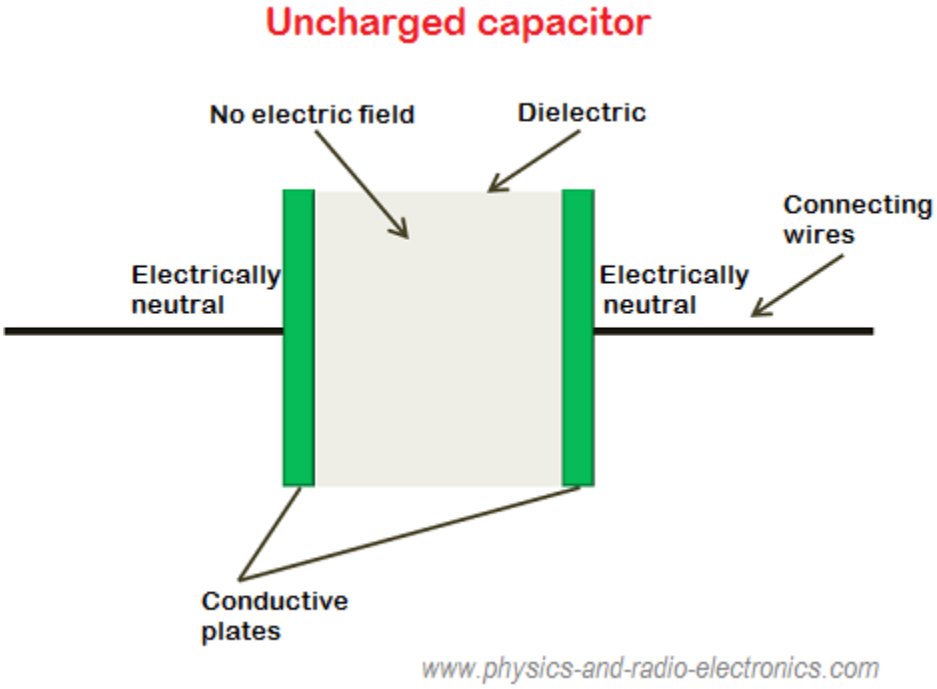
Construction of capacitor: **The basic construction of all capacitors is similar. The construction of capacitor is very simple. A capacitor is made of two electrically conductive plates placed close to each other, but they do not touch each other. These conductive plates are normally made of materials such as aluminum, brass, or copper.**



The conductive plates of a capacitor is separated by a small distance. The empty space between these plates is filled with a non-conductive material or electric insulator or dielectric region. The non-conductive material or region between the two plates may be an air, vacuum, glass, liquid, or solid. This non-conductive material is called dielectric.

The two conductive plates of the capacitor are good conductors of electricity. Therefore, they can easily pass the electric current through them. The conductive plates of the capacitor also hold the electric charge. In capacitors, these plates are mainly used to hold or store the electric charge.

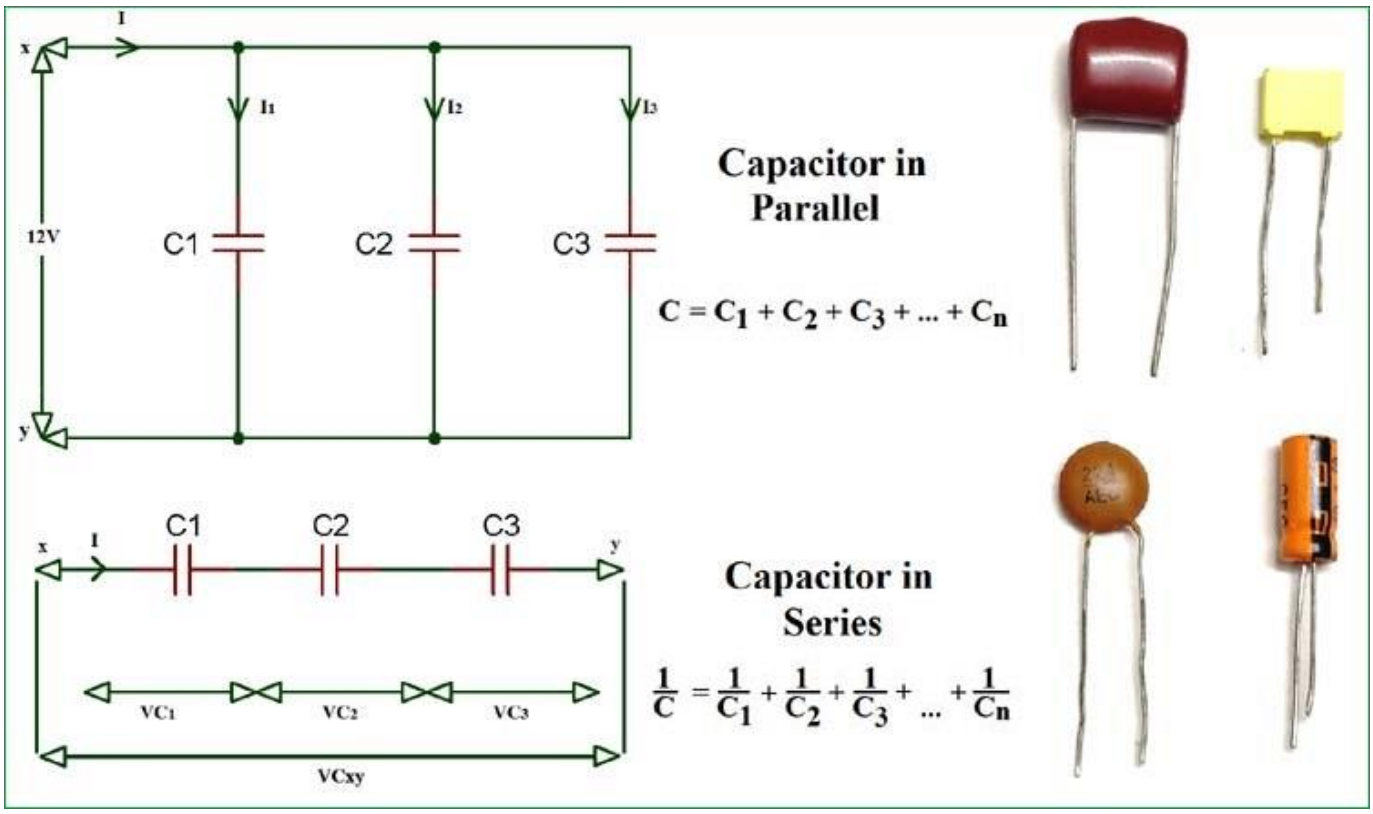
<u>Working of Capacitor:</u> When no voltage is applied to the capacitor, the total number of electrons and protons in the left plate of the capacitor are equal. We know that any object, which has equal number of electrons and protons is said to be electrically neutral. Hence, the total charge of the left plate cancels out and becomes electrically neutral. Therefore, the left plate of the capacitor is said to be electrical neutral.



On the other hand, the right plate also has equal number of electrons and protons. Therefore, the total charge of the right plate cancels out and becomes electrically neutral.

No electric charge means no electric field. Therefore, the capacitor does not store charge when no voltage is applied.

Diagram of Capacitor :



Advantage And Disadvantage of Capacitor :

Advantages:

- **Low losses.**
- **Little maintenance is required.**
- **Installation is easy.**

- **Able to work under ordinary atmosphere.**

Disadvantages:

- **Short service life ranging from 8 to 10 years.**
- **If voltage exceeds the rated value, chance of damage is more.**
- **Once the capacitors are damaged, their repair is uneconomical.**

Application Of Capacitor:

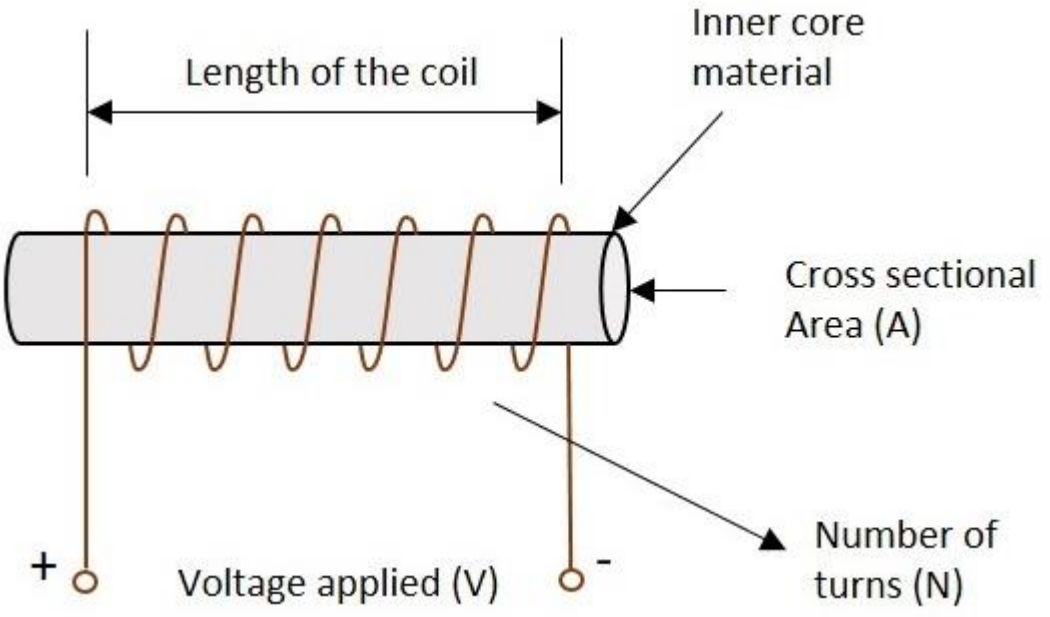
The primary application of a capacitor is to store electric energy when it is connected to an electric circuit. And even if it gets disconnected from the electric circuit, it can consume that stored energy, and it can work as a temporary battery.

Inductor:

Construction Of Inductor: The air core inductor's basic construction is, it consists of coils with a number of wire turns that are wounded on ordinary cardboard. So, ceramics or plastic former may be utilized as an insulating material. In this inductor, the gap in a paper or plastic former works like a core. So this gap has nothing but it has air inside of the former, so known as the air core inductor. Therefore, air works as a core.

Working of Inductor: These inductors work on the basis that air has a fairly minimum electrical conductivity. So the air-core inductance is also low, producing a weak magnetic field. Because of the small magnetic field generation of air cores', it achieves a faster current rise while avoiding signal loss. This loss mainly happens whenever an inductor generates high magnetic field strengths within an electric circuit.

Diagram Of Inductor:



Advantage And Disadvantage of Inductor:

Advantage:

1. The air core inductor is simple in construction.
2. The air core inductor does not depend upon the value of current it carries and also eliminates the iron losses from magnetic core.
3. It has no core losses at high frequencies.
4. The air core inductor is cheap

Disadvantage:

1. The inductors of high inductance value are not possible.
2. It is in large size.
3. The number of turns in a coil necessary to achieve the same inductance that would occur in a solid-core inductor.
4. Its Q factor is low

Application Of Inductor:

- The inductor is used to minimize the alternating current (AC) in a circuit.
- It is used in radio transmitters and radio receivers.
- Used for allowing the flow of direct current (DC).
- To minimize the ripple voltage or ripple factor it is used in filter circuits.
- It is used in the LC resonant circuits.
- To select the frequency it is used in tuning circuits.
- Used for interstage coupling of amplifier.

CONCLUSION:

From the above discussion, we can conclude that both inductors and capacitors are passive circuit elements that store energy in the magnetic field and electrostatic field, respectively. Both of these elements are extensively used in electrical and electronic circuit designing

WEEKLY PROGRESS REPORT

MICRO PROJECT

SR.NO.	WEEK	ACTIVITY PERFORMED	SIGN OF GUIDE	DATE
1	1st	Discussion and finalization of topic		
2	2nd	Preparation and submission of Abstract		
3	3rd	Literature Review		
4	4th	Collection of Data		
5	5th	Collection of Data		
6	6th	Discussion and outline of Content		
7	7th	Formulation of Content		
8	8th	Editing and proof Reading of Content		
9	9th	Compilation of Report And Presentation		
10	10th	Seminar		
11	11th	Viva voce		
12	12th	Final submission of Micro Project		

Sign of the student **Sign of the Faculty**

SEMINAR PRINTOUTS

REFERENCE:

I am looking to sponsor passive components projects. It can be anything involving capacitors, inductors or resistors.

If you are interested, please offer your project ideas in the comments below. Also, give me a rough idea of the BOM.

SOURCES USED:

WWW.Goggle.Com

WWW.Brainly.Com

WWW.Internet.Com

WWW.Topper.Com

ANEEXURE II

Evaluation Sheet for the Micro Project

Academic Year: 2021-22 **Name of the Faculty:**

Course: Business Communication Using Computers **Course code: 22009**

Semester: II

Title of the project:

Cos addressed by Micro Project:

A: Communicate effectively by avoiding barriers in various formal and informal situations.

B: communicate skilfully using non-verbal methods of communication

C: Give presentations by using audio-visual aids.

D: Write reports using correct guidelines.

Major learning outcomes achieved by students by doing the project (a)

Practical outcome:

1) Deliver oral presentations using correct grammar.

(b) Unit outcomes in Cognitive domain:

1) Rewrite sentences using relevant forms of verbs.

(c) Outcomes in Affective domain:

1) Function as team member
2) Follow Ethics

Comments/suggestions about team work /leadership/inter-personal communication (if any)

……

Roll No	Student Name	Marks out of 6 for performance in group activity (D5 Col.8)	Marks out of 4for performance in oral/ presentation (D5 Col.9)	Total out of 10

(Signature of Faculty)