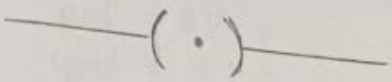
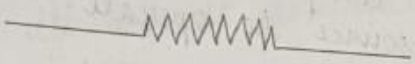
* CIRCUIT SYMBOLS

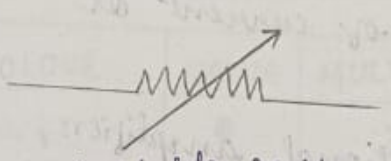
Open switch key



Plug key (switch closed)

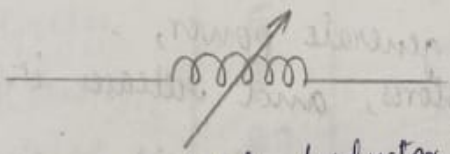


Resistance

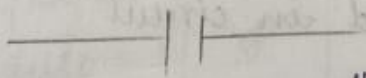


Variable resistance

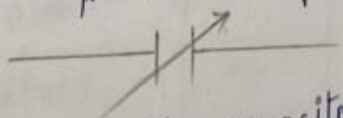
Inductor



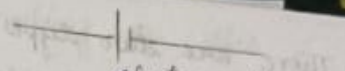
Variable inductor



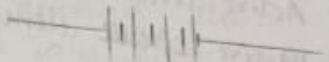
polarised capacitor



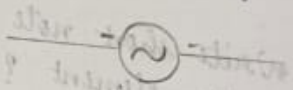
variable capacitor



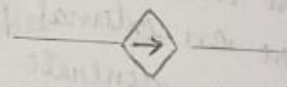
Electric cell



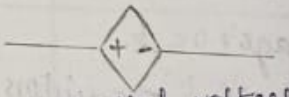
Battery



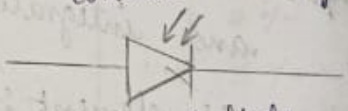
AC source



Controlled current sou

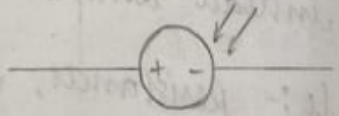


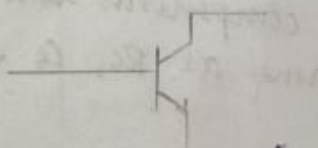
controlled voltage source



photodiode

LED





NPN Transistor

Que :- Explain the colour coding of the resistor ?

The colour code values for denoting the tolerance rating of resistors are given as :

Brown = 1 %.
Red = 2 %.
Gold = 5 %.
Silver = 10 %.

If the resistor has no fourth tolerance band then its default tolerance will be 20 %.

Resistor colour code:

COLOUR	VALUE	MULTIPLIER	TOLERANCE
Black	0	$\times 10^0$	$\pm$ 20 %
Brown	1	$\times 10^1$	$\pm$ 1 %
Red	2	$\times 10^2$	$\pm$ 2 %
Organge	3	$\times 10^3$	$\pm$ 3 %
yellow	4	$\times 10^4$	-0, +100 %
Green	5	$\times 10^5$	$\pm$ 0.5 %
Blue	6	$\times 10^6$	$\pm$ 0.25 %
violet	7	$\times 10^7$	$\pm$ 0.10 %
Gray	8	$\times 10^8$	$\pm$ 0.05 %
white	9	$\times 10^9$	$\pm$ 10 %
Gold	-	$\times 10^{-1}$	$\pm$ 5 %
silver	-	$\times 10^{-2}$	$\pm$ 10 %

NETWORK

Network topology :-

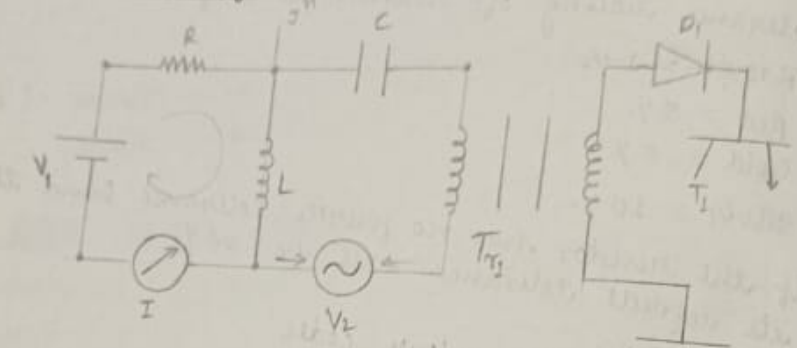


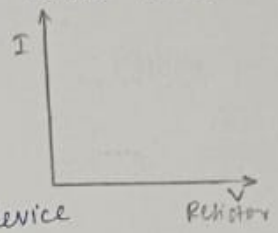
Figure :- illustration of Network topology

Total no. of elements = 9
voltage source = V_1 → Dc
Current- source = I
Branch = loop →
Node / Jⁿ = Mesh

Network topology is the arrangement of the elements of a communication network. Network topology can be used to define or describe the arrangement of various types of telecommunication networks, including command and control radio network, industrial fieldbusses and computer networks.

09/02/22
Wednesday

① linear circuit and Non linear circuit Transitor Diode



Resistor

Single pole
② Unielateral and Bilateral device

③ P-N Junction is Assymetrical device

④ Lumped Vs distributed circuit element

↓ LCR can be seperated
LCR can not be
Eg :- Antina

↓ seperated

* There are two types of circuit elements
(i) Active circuit element
(ii) passive circuit element

Que :- Write short note on active and passive circuit element ?

Active circuit element :-

Active circuit elements are component that require an external power source to operate. they can generate or amplify energy, as well as control the flow of current or voltage.

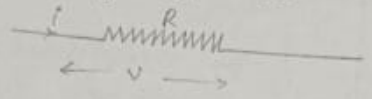
Example :- Transistors, operational amplifiers, and integrated circuits.

passive circuit element :-

A passive circuit element is an electrical component that doesnot generate power, but instead dissipates, stores, and releases it

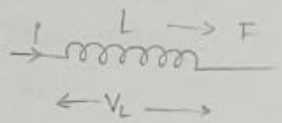
Example :- Resistances, capacitors and coil. these components are labelled in circuit diagrams as Rs, Cs and Ls.

Symbol of Resistance



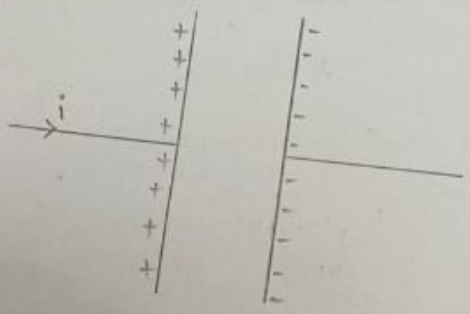
$$V_R = IR$$

⇒ 'L' (Inductor) → Faraday's



$$V_L = L \frac{di}{dt}$$

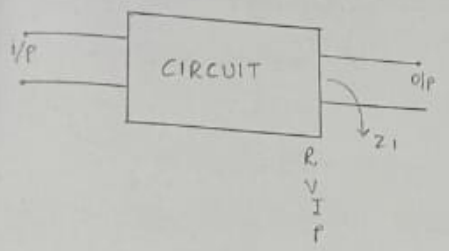
⇒ 'C' (capacitor) → Henry



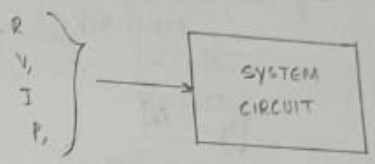
$$V_C = \frac{1}{C} \int i(t)\, dt$$

unit of capacitor is Henry.

CIRCUIT ANALYSIS



SYNTHESIS OF A CIRCUIT



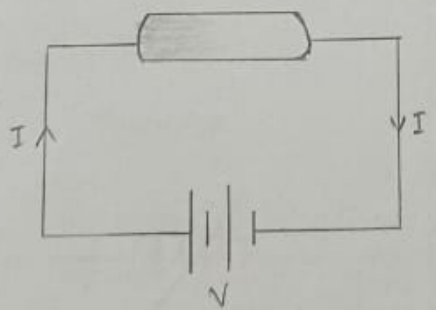
08/08/23
Tuesday

'R' [Resistor]

Resistance

* Ohm's law :-

If the physical quantity remains unchanged then the ratio of voltage to current is always constant



$\frac{V}{I} = R$ → unit Volt/Amp → "ohm"

$V = IR$

$\Rightarrow \boxed{V \propto I}$

$\frac{V}{I}$ = constant

BASIC CIRCUIT ELEMENT

A circuit is a conducting path through which either current flow or intended to flow.

Example :- wire, switch, transformer, resistor, capacitor etc.

* CIRCUIT ELEMENT

The elements used to design circuit is called circuit elements.

* BASIC CIRCUIT ELEMENTS

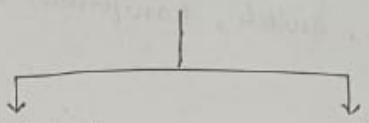
-the fundamental circuit elements which are used in all types of electrical and electronics devices is known as basic circuit elements.

Example :- LCR is known as Basic circuit elements.

07/08/2023
Monday

ELECTRICAL SCIENCE - I

Electrical science



	Electrical	Electronics
1. f (Hz)	50 Hz (low)	very high (GHz...)
~~SXf~~		
2. P (V, I)	very high (220 V)	very low (± 5 V)

* Electrical :- 50 Hz

Have fix frequency and low frequency ~~SXf~~
P(V, I).

* electronics :-

High frequency (GHz) speed is high and power consumption supply is low.