To get Rank (i) read notes perfectly

       (ii) Volume-II (Homework) — After Completion of Syllabus
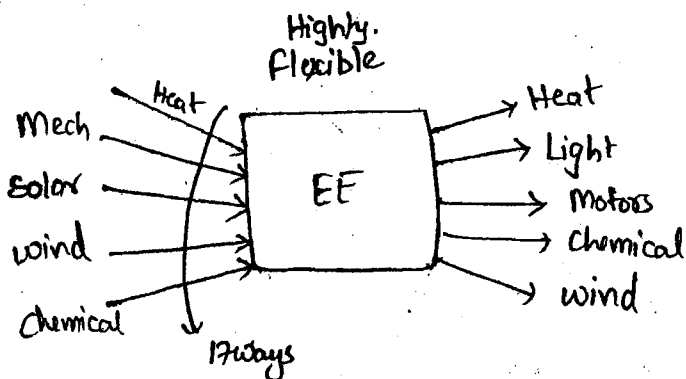
       (iii) IES objective of ECT, EEE

       (iv) All gate bits of ECE, EEE & IN

       (v) Exam practice - Mock & Gate Online Tests.

Electrical Energy ──┬── Interconvertability
                └── Transportation.

I   Highly. Flexible

Mech, Solar, wind, Chemical, Heat → **EE** → Heat, Light, Motors, Chemical, wind   17 ways

II Generation & Transportations

    * Bulk Quantities

    * Longer distance

    * Most economical way.

    * cheap.

1 Unit of Electrical Energy = 1 KWH

                    = 1000W * 1hr .

Design Parameters:-

* Precision, Accuracy, automation, control, Portable, Compact, fast & Intelligent

If Current leaves the +ve terminal
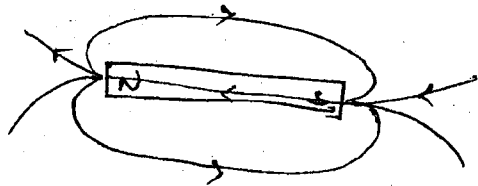then it is called Source.
   Active Element

Source

If Current leaves the -ve terminal
then it is called Sink
   Passive element

Sink

Permanent Magnet:-
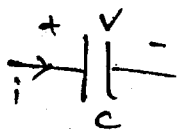

$i \geq 10mA$ — Practical current to kill a person

Flux never moves but it is established.

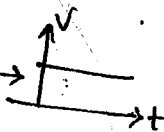R — LTI property of matter

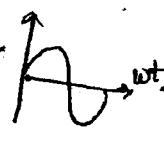L — Electromagnetic property of matter

C — Electrostatic property of ''

Capacitor

Ohm's law

$i = c\dfrac{dv}{dt}$

DC → $i_c = 0$ — open ckt

AC → $I_c = I_m \sin(\omega t + 90°)$

Dielectrics are special insulators which conducts with the help of Polarization.

ᴿ Engineering is application of science.
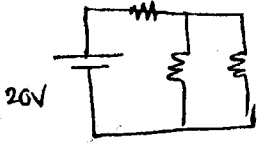
Circuit	Network

Circuit

Current (i) is intended to flow through all the elements.
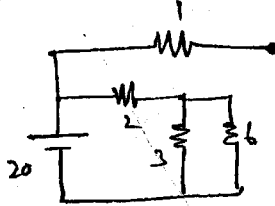
Condition for i to flow
(i) EMF
(ii) closed path.

20V

Network

No closed path & 'i' cannot flow through all components. Circuits are building block of Networks.

(i) Emf exists
(ii) Closed Path don't exist

20

* Practical big interconnected systems are always <u>networks</u> but that path where Current flows is called Circuit

* Circuits are building blocks of N/ws. <u>Ex:-</u> Communication System is a big N/w but a transmitter working in it is a circuit @ s/g level. Our power system is a big N/w but a motor running in it is a ckt @ powe. level.
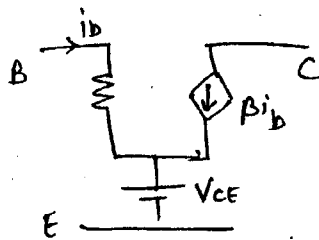
<u>Network Components /Elements:-</u>

All our practical Applications are our Components in electrical engineering When these Components are modelled mathematically as a ckt or N/w we use fundamental N/w Components such as V, I, R, L, C etc to model the
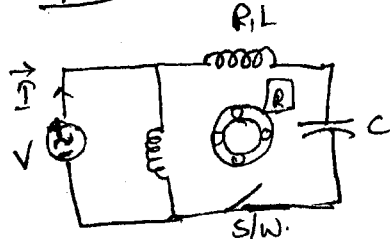
① Heater
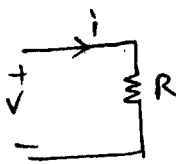
② BJT

③ fan

∞ impedance

$$V, \overset{\uparrow}{I}, R, C, L$$

Ideal Voltage will have no internal R

Independent of frequency
$V = IR$

Stores Energy, Don't create losses
Depends of frequency $\quad V = L \, di/dt$

$i = C \, dv/dt$