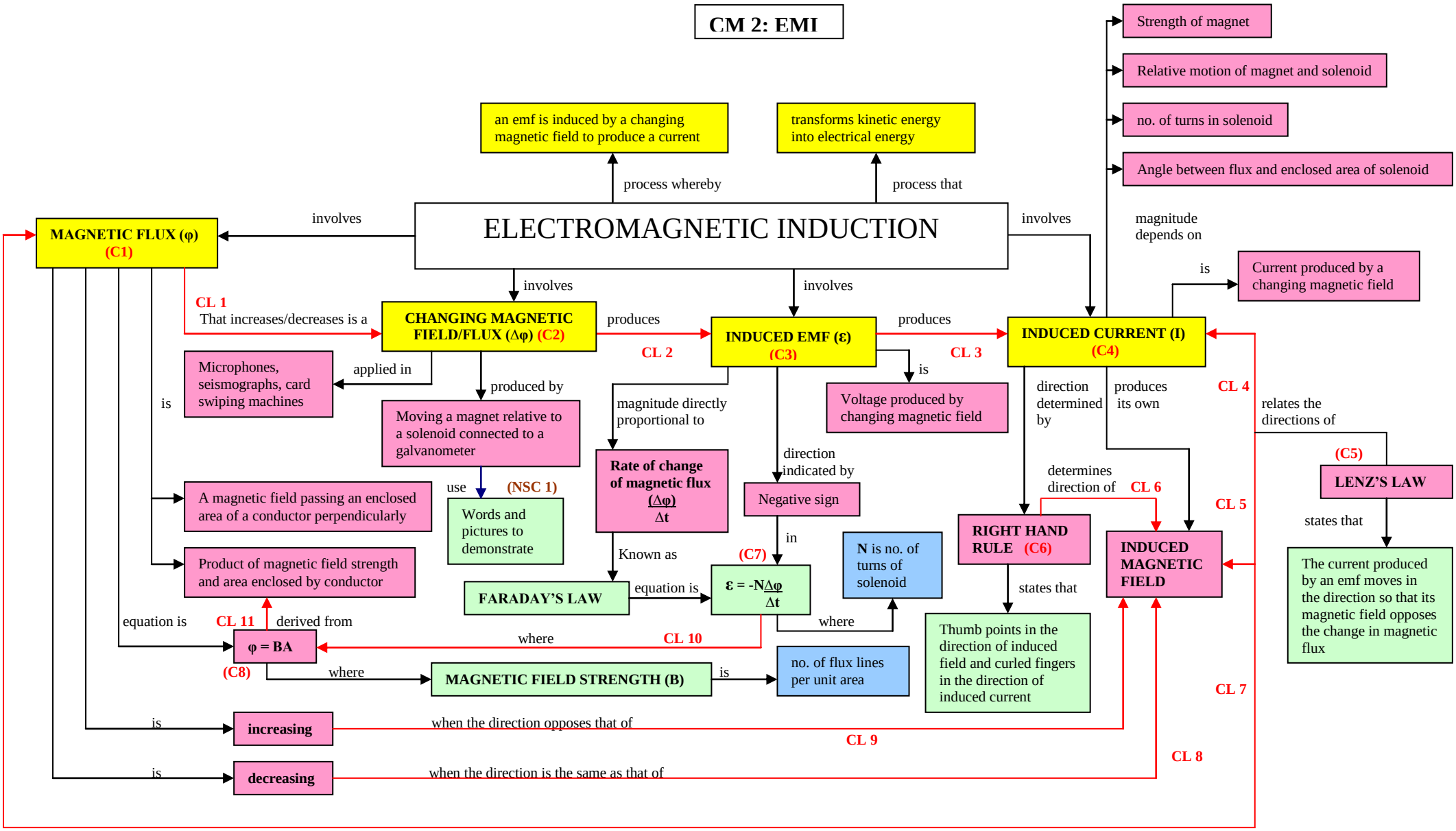
CM 2: EMI
ELECTROMAGNETIC INDUCTION
an emf is induced by a changing magnetic field to produce a current
transforms kinetic energy into electrical energy
process whereby
process that
involves
involves
involves
involves
MAGNETIC FLUX (φ) (C1)
CL 1
That increases/decreases is a
CHANGING MAGNETIC FIELD/FLUX (Δφ) (C2)
produces
CL 2
INDUCED EMF (ε) (C3)
produces
CL 3
INDUCED CURRENT (I) (C4)
Strength of magnet
Relative motion of magnet and solenoid
no. of turns in solenoid
Angle between flux and enclosed area of solenoid
magnitude depends on
is
Current produced by a changing magnetic field
applied in
Microphones, seismographs, card swiping machines
produced by
Moving a magnet relative to a solenoid connected to a galvanometer
use
(NSC 1)
Words and pictures to demonstrate
is
A magnetic field passing an enclosed area of a conductor perpendicularly
Product of magnetic field strength and area enclosed by conductor
magnitude directly proportional to
Rate of change of magnetic flux (Δφ)/Δt
Known as
FARADAY'S LAW
equation is
(C7)
ε = -NΔφ/Δt
where
N is no. of turns of solenoid
direction indicated by
Negative sign
in
is
Voltage produced by changing magnetic field
direction determined by
produces its own
CL 4
relates the directions of
(C5)
LENZ'S LAW
states that
The current produced by an emf moves in the direction so that its magnetic field opposes the change in magnetic flux
determines direction of
CL 6
CL 5
RIGHT HAND RULE (C6)
states that
Thumb points in the direction of induced field and curled fingers in the direction of induced current
INDUCED MAGNETIC FIELD
equation is
CL 11
derived from
φ = BA
(C8)
where
CL 10
where
MAGNETIC FIELD STRENGTH (B)
is
no. of flux lines per unit area
CL 7
is
increasing
when the direction opposes that of
CL 9
CL 8
is
decreasing
when the direction is the same as that of