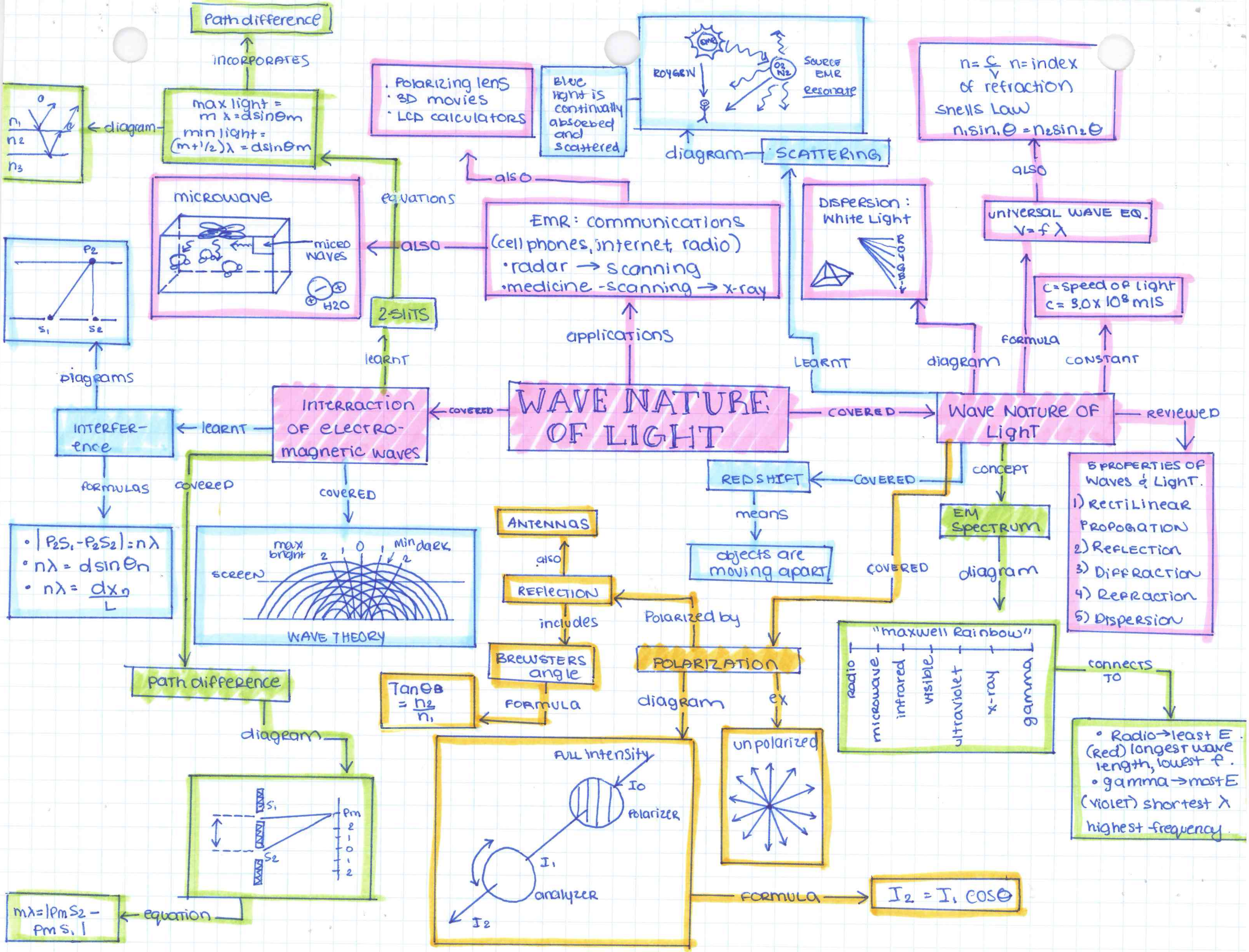

WAVE NATURE OF LIGHT
covered
Interaction of electro-magnetic waves
learnt
Interfer-ence
formulas
• |P₂S₁ − P₂S₂| = nλ
• nλ = d sin θn
• nλ = dxn / L
diagrams
P2
S1
S2
covered
Path difference
diagram
S1
S2
Pm
2
1
0
1
2
equation
mλ = |PmS2 − PmS1|
covered
max bright
min dark
2
1
0
1
2
screen
WAVE THEORY
learnt
2 SLITS
equations
max light = mλ = d sin θm
min light = (m + 1/2)λ = d sin θm
incorporates
Path difference
diagram
n1
n2
n3
θ
applications
EMR: communications (cell phones, internet, radio)
• radar → scanning
• medicine - scanning → x-ray
also
microwave
micro waves
H2O
also
• Polarizing lens
• 3D movies
• LCD calculators
covered
Wave Nature of Light
learnt
SCATTERING
diagram
Blue light is continually absorbed and scattered
ROYGBIV
Source EMR
O2 N2
resonate
diagram
Dispersion: White Light
R O Y G B I V
formula
Universal wave eq.
v = f λ
also
n = c/v n = index of refraction
Snells Law
n₁sin₁θ = n₂sin₂θ
constant
c = speed of light
c = 3.0 x 10⁸ m/s
reviewed
5 properties of waves & light.
1) Rectilinear Propogation
2) Reflection
3) Diffraction
4) Refraction
5) Dispersion
concept
EM Spectrum
diagram
"maxwell Rainbow"
Radio
microwave
infrared
visible
ultraviolet
x-ray
gamma
connects to
• Radio → least E (red) longest wave length, lowest f.
• gamma → most E (violet) shortest λ highest frequency
covered
Redshift
means
objects are moving apart
covered
Polarization
Polarized by
Reflection
also
Antennas
includes
Brewsters angle
formula
Tan θB = n₂/n₁
diagram
Full intensity
I0
Polarizer
I1
analyzer
I2
formula
I₂ = I₁ cos θ
ex
unpolarized