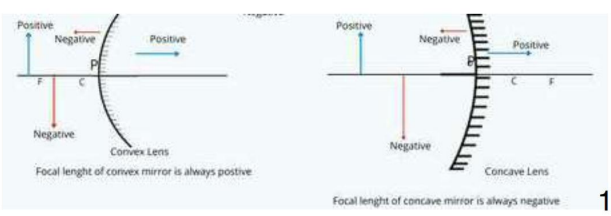
CHAPTER : ELECTRICITY

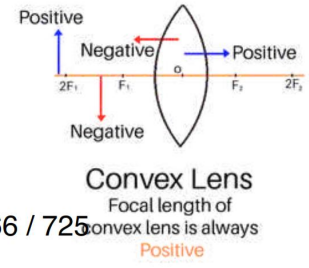
Sr. No	Topic	Formula
1.	Voltage (V)	$V = \frac{W}{Q}$ W = Work done, Q = Charge
2.	Current (i)	$i = \frac{Q}{t}$ Q = Charge, t = time
3.	Power (P)	$P = Vi$ V = Voltage, i = Current
4.	Conductivity(σ)	$sigma = \frac{1}{p}$ P = rho (Resistivity)
5.	Resistance(R)	$R = \frac{pl}{A} or \frac{V}{i}$ P = rho, l = length, A = Area
6.	Resistance in Series	$R_s = R_1 + R_2 + R_3 . . . . .$
7.	Power in Series	$P_s = Vi = i^2R$ $P_s = \frac{1}{P_1} + \frac{1}{P_2} + \frac{1}{P_3} . . . . .$
8.	Resistance in Parallel	$\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} . . . . .$
9.	Power in Parallel	$P_p = Vi = \frac{V^2}{R}$ $P_p = P_1 + P_2 + P_3 . . . . .$
10.	Electric Energy or Heat Produced	$E = i^2Rt = Vit = \frac{V^2}{R}t$

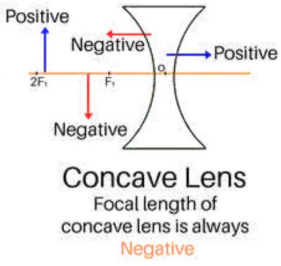
CHAPTER : LIGHT

Sr. No	Topic	Formula
1.	Mirror Formula	$\frac{1}{V}+\frac{1}{U}=\frac{1}{F}$ V = image distance U = object distance F = focal length
2.	Lens Formula	$\frac{1}{V}-\frac{1}{U}=\frac{1}{F}$ V = image distance U = object distance F = focal length
3.	Magnifiation	$\frac{H_i}{H_o}=\frac{-V}{U}$ Hi = Height of image Ho = Height of object
4.	Power of a lens	$P=\frac{1}{F}$ F = Focal length
5.	Absolute Refractive index	$n=\frac{speed.of.light.in.Vacume}{speed.of.light.in.Medium}$
6.	Relative Refractive Index	$n_{21}=\frac{speed.of.light.in.Medium1}{speed.of.light.in.Medium2}$
7.	Snell's Law	$n_{21}=\frac{sini}{sinr}$ i = incidence angle r = refraction angle
8.	Combining power of lenses	$P=P_1+P_2+P_3.....$
9.	Radius Of Curvature	2*Focal length = 2f

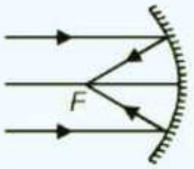
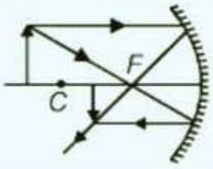
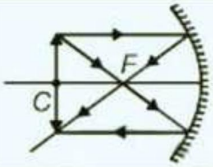
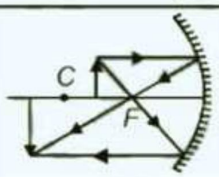
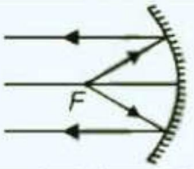
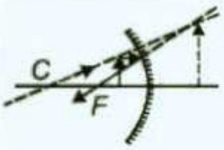
SIGN CONVENTIONS FOR MIRROR & LENS



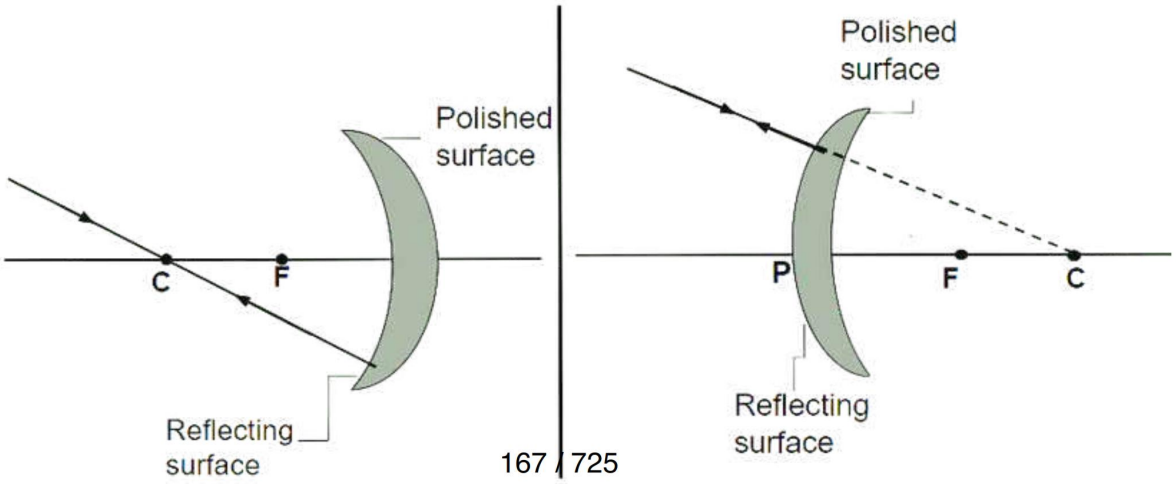




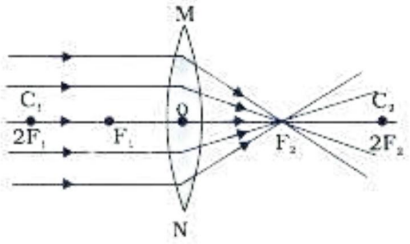
IMAGES FORMED BY CONCAVE MIRROR

Position of object	Figure	Position of image	Nature of image
1. At infinity		At the principal focus or in the focal plane	Real, inverted, extremely diminished in size
2. Beyond the centre of curvature		Between the principal focus and centre of curvature	Real, inverted and diminished
3. At the centre of curvature		At the centre of curvature	Real, inverted and equal to object
4. Between focus and centre of curvature		Beyond centre of curvature	Real, inverted and bigger than object.
5. At the principal focus		At infinity	Extremely magnified
6. Between the pole and principal focus		Behind the mirror	Virtual, erect and magnified

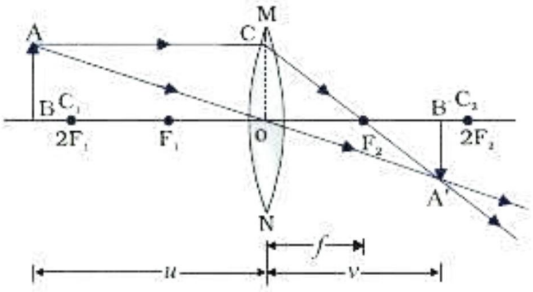
IMAGES FORMED BY CONVEX MIRROR



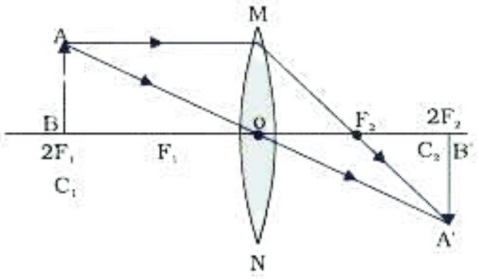
IMAGES FORMED BY CONCEX LENS



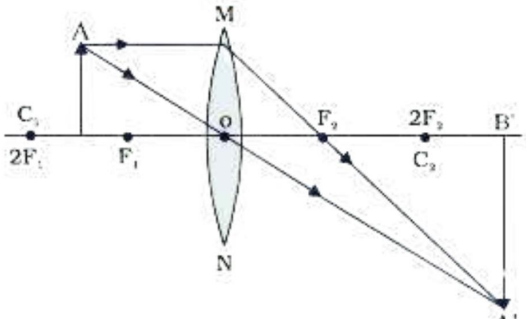
Case (i) Object at infinity



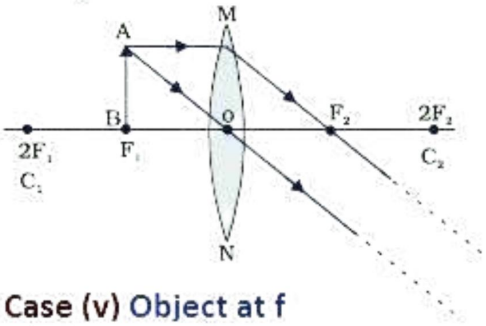
Case (ii) Object at beyond 2f



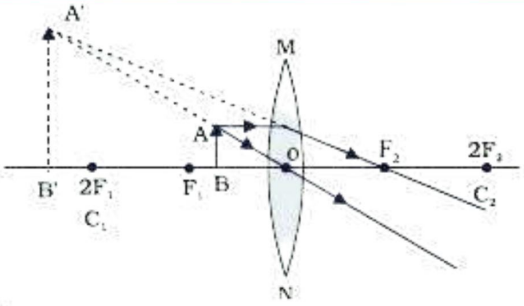
Case (iii) Object at 2f



Case (iv) Object in between f and 2f

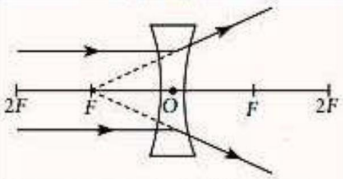
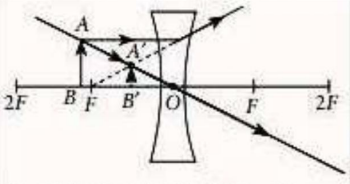


Case (v) Object at f

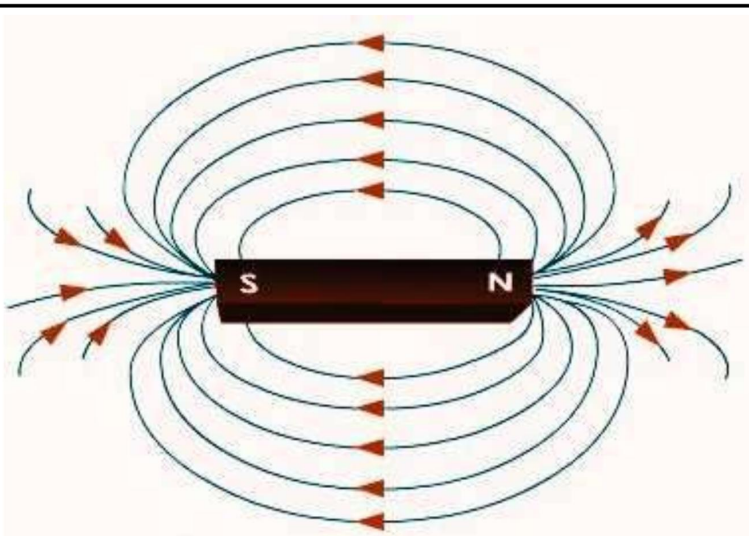
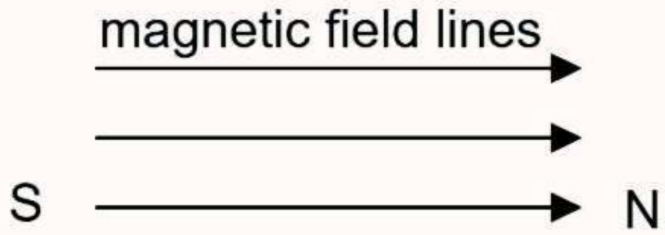
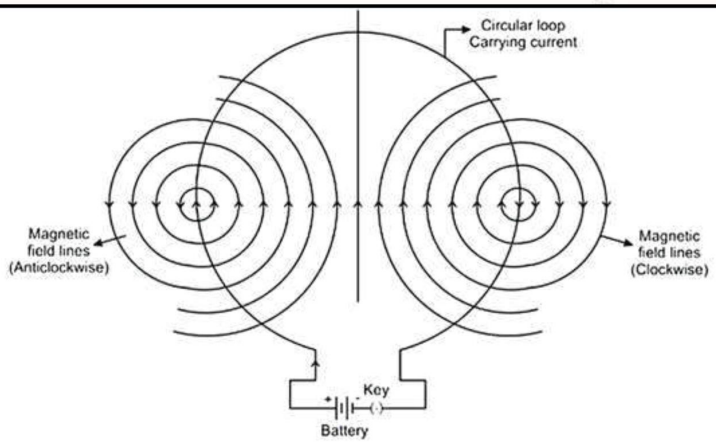
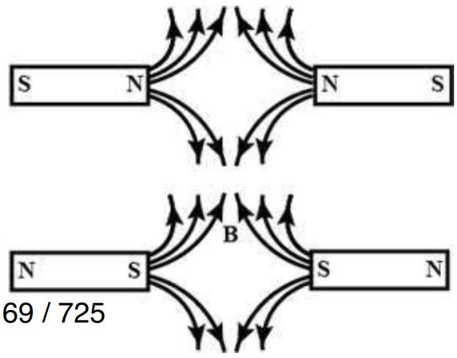


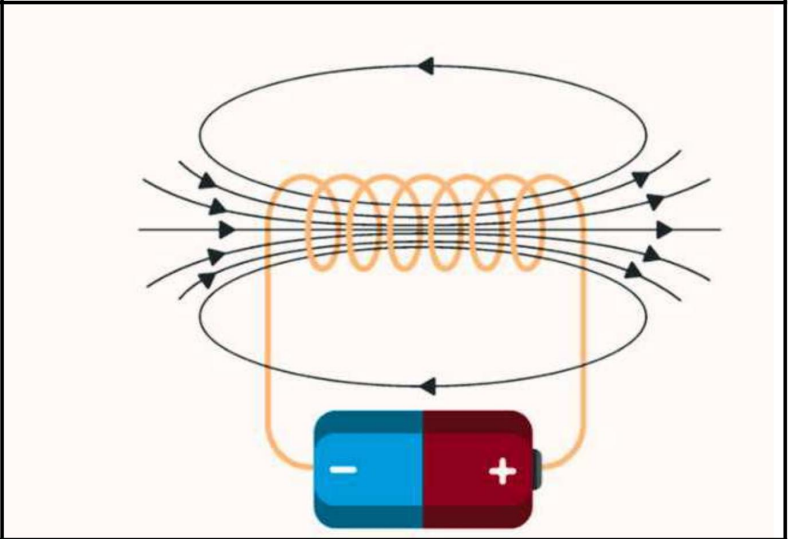
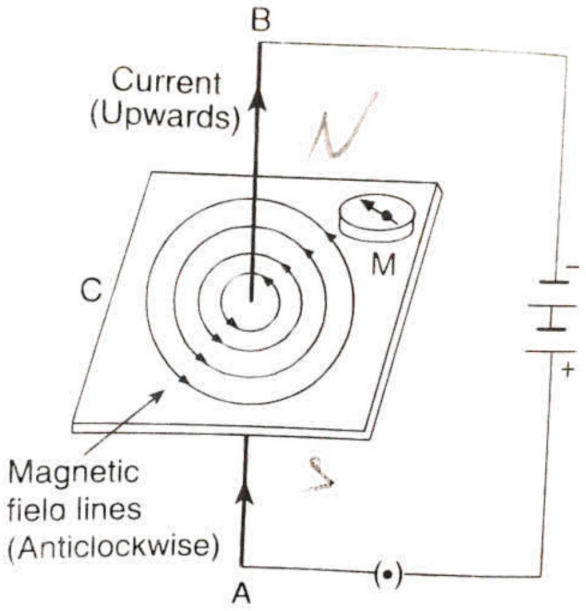
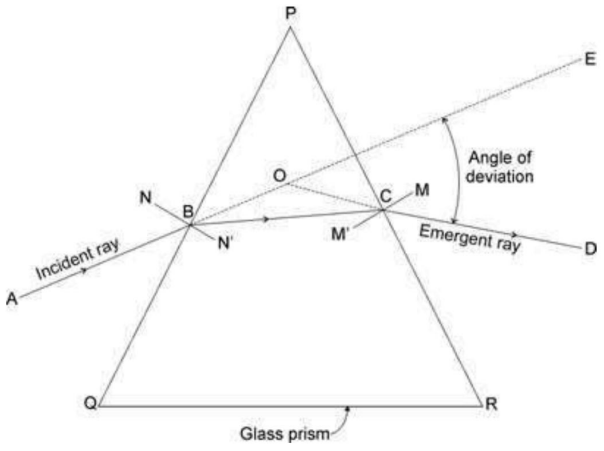
Case (vi) Object distance < f

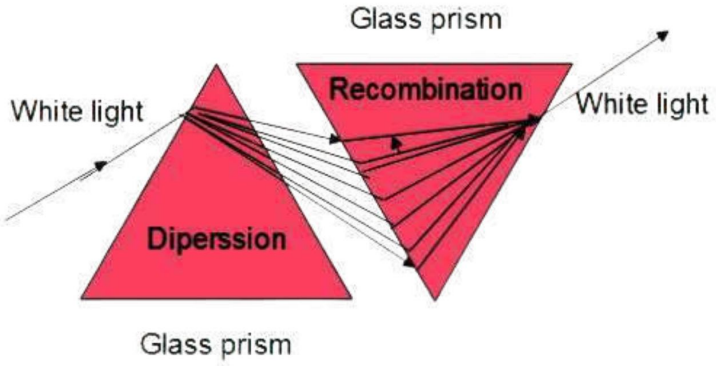
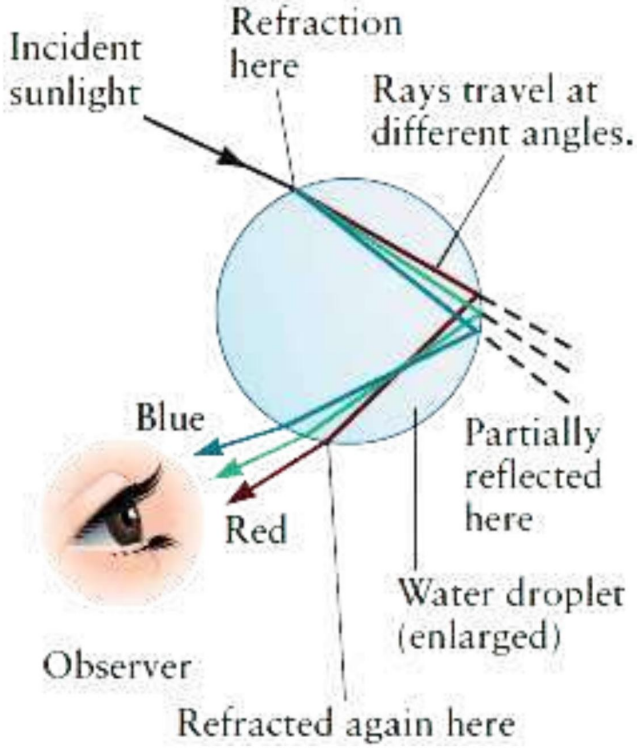
IMAGES FORMED BY CONCAVE LENS

	Ray diagram	Position of object	Position of image	Nature of image
(a)	 u = –ve, v = –ve and f = –ve	At infinity	At F	Virtual, erect and highly diminished
(b)	 u = –ve, v = –ve and f = –ve	Between infinity and O	Between F and O	Virtual, erect and diminished

IMPORTANT DIAGRAMS

Topic	Diagram
Magnetic lines areound a magnetic bar	
Uniform Magnetic Field	
Magnetic Field lines due to current carrying loop	
Magnetic Lines around two Magnets	

Topic	Diagram
Magnetic lines areound a solenoid	
Magnetic lines around a current carrying conductor	
Refraction through a glass prism	

Topic	Diagram
Recombination of spectrum of white light	
Rainbow Formation	
Refraction through a glass slab