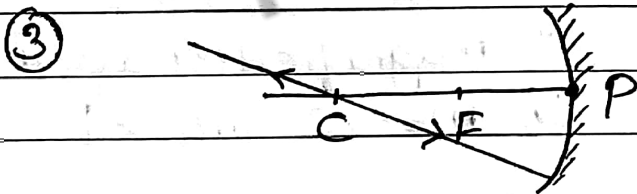
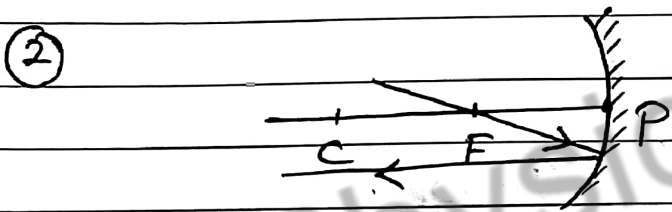
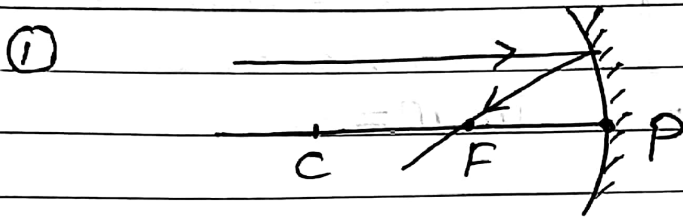


Ray Optics - 05

Image Formation by Concave & Convex Mirrors for different positions of object.

① Concave Mirror

Rules for image formation



Case I: When object is beyond C (between ∞ & C)

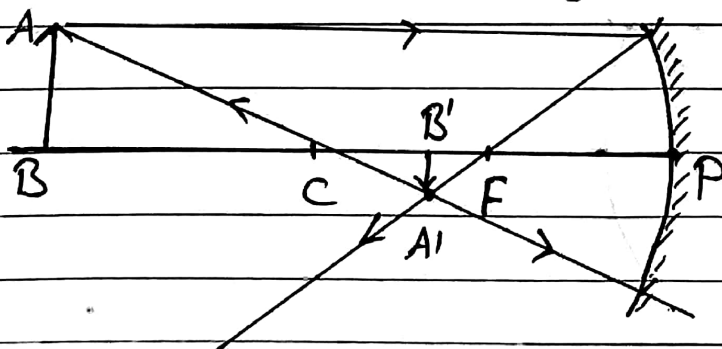


Image is formed

- between C & F
- Real & Inverted
- diminished
- $m = -ve, |m| < 1$

linear magnification $m = \frac{h_i}{h_o} = \frac{I}{O}$

Case II: Object at C

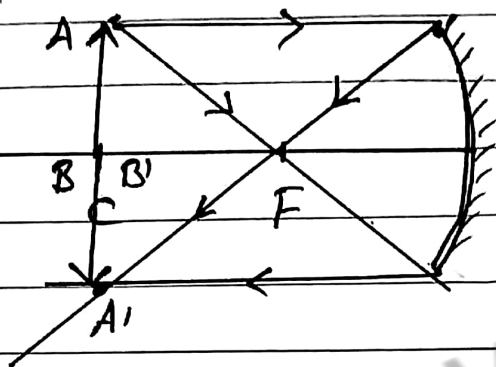


Image is

- i) formed at C
- ii) Real & Inverted
- iii) same size
- iv) $m = -1$

Case III: Object between C & F

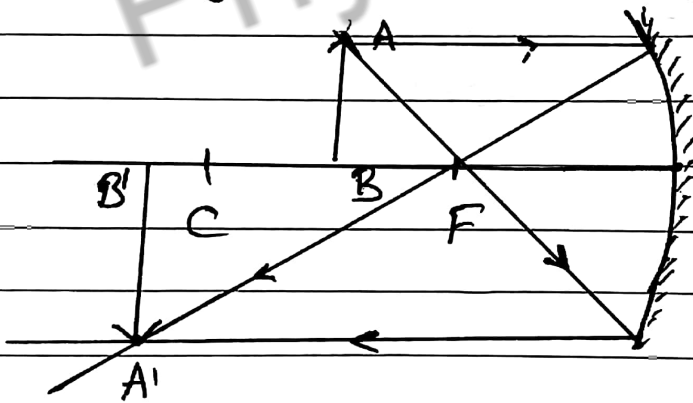


Image is

- i) formed beyond C
- ii) Real & inverted
- iii) magnified/enlarged
- iv) $m = -ve$ $|m| > 1$

Case IV: Object at F

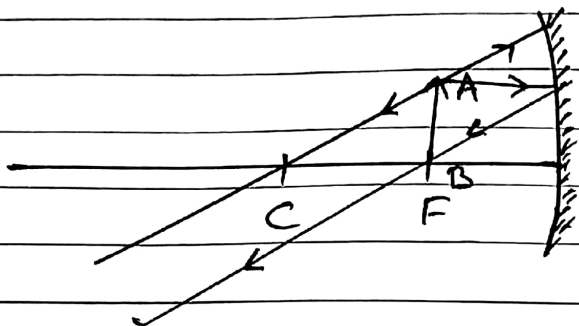


Image is

- i) formed at ∞
- ii) Real & inverted
- iii) $m = -ve$ & $|m| \gg 1$
- iv) highly enlarged.

Case V: Object between F & P

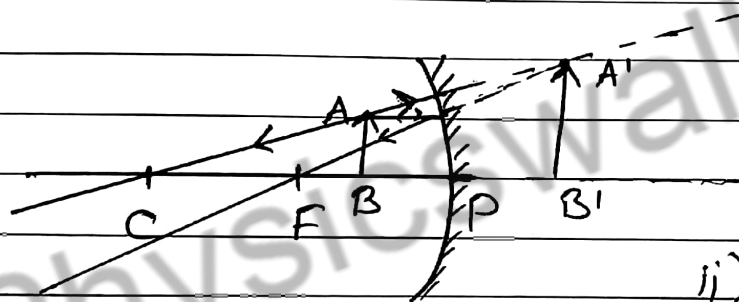


Image is

- i) formed inside mirror on other side
- ii) Virtual & Erect
- iii) Magnified/enlarged
- iv) $m = +ve$ $|m| > 1$

Note: $m = +ve$ only for this case

Case VI: Object at ∞

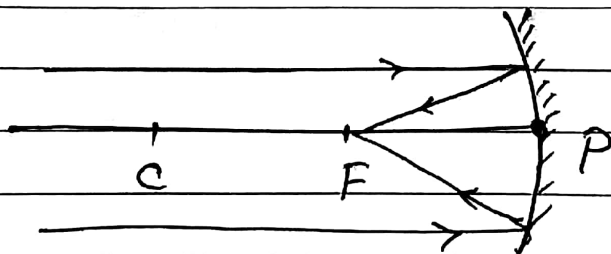
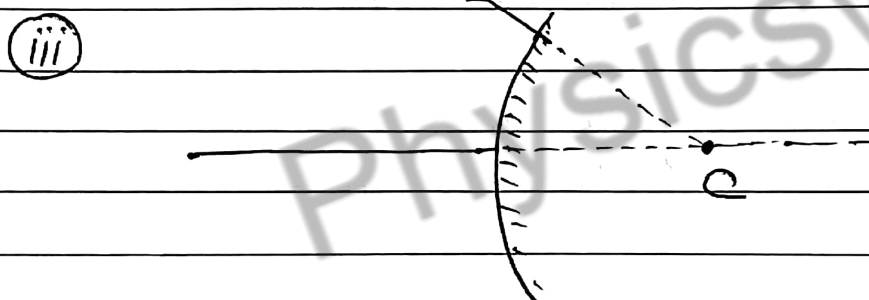
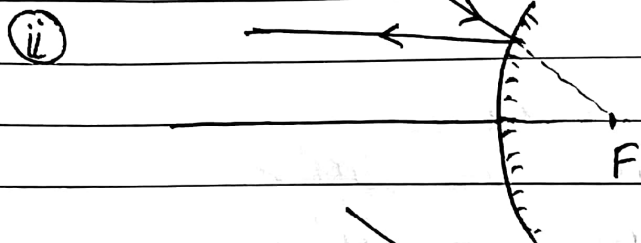
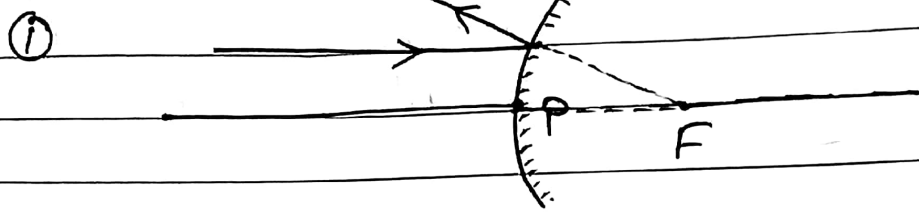


Image is

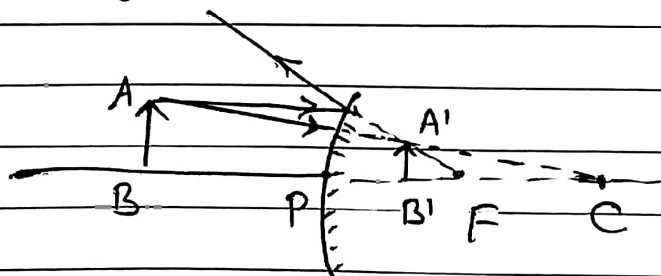
- i) formed at F
- ii) Real & Inverted
- iii) highly diminished
- iv) $m = +ve$ $|m| \ll 1$

② Convex Mirror:

Rules for image formation



Case I: Object at any position except ∞



- Image is
- i) formed on other side of mirror between Pole & Focus
 - ii) Erect & Virtual
 - iii) diminished
 - iv) $m = +ve$ ($|m| < 1$)

Case II: Object at ∞



Image is
i) formed at F
ii) Erect & Virtual
iii) highly diminished
iv) $m = +ve$ $|m| < 1$

Summary:

Concave Mirror can form images \div

- | | | |
|-------------------------|-----------|-----------|
| i) Inverted Magnified | $m = -ve$ | $ m > 1$ |
| ii) Inverted Diminished | $m = -ve$ | $ m < 1$ |
| iii) Erect Magnified | $m = +ve$ | $ m > 1$ |

Convex Mirror always form images \div

- | | | |
|---------------------|-----------|-----------|
| i) Erect Diminished | $m = +ve$ | $ m < 1$ |
|---------------------|-----------|-----------|