

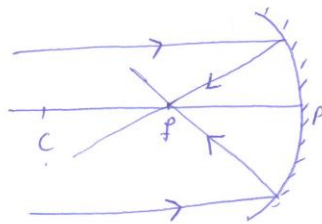
REFLECTION OF LIGHT

CLASS 10

①

Image formation by Concave mirror -

① when object is at infinity -



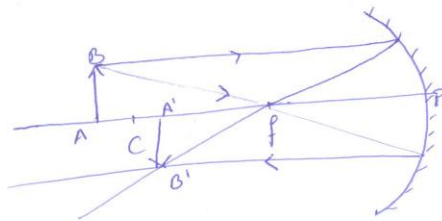
Nature of image -

formed at focus.

Diminished ~~at~~ in size.

Real and inverted.

② When the object is beyond C -



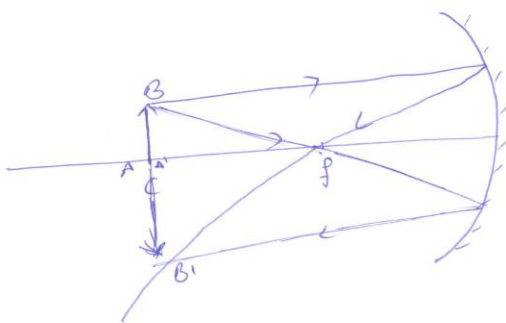
Nature of image -

Formed in between  
C & F

Smaller in size

Real and inverted

③ When the object is at C -



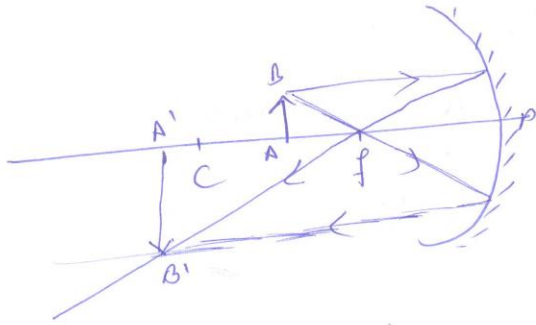
Nature of Image

formed at C

Same size

Real & inverted.

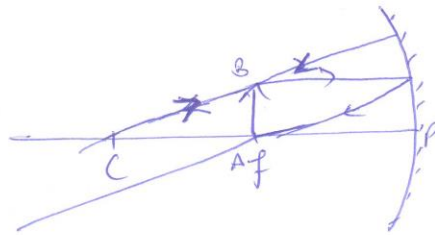
(A) When the object is in b/w  $F$  &  $C$  -



Nature of Image

Formed beyond  $C$   
Bigger in Size  
Real & inverted

(B) when the object is placed at  $f$  -

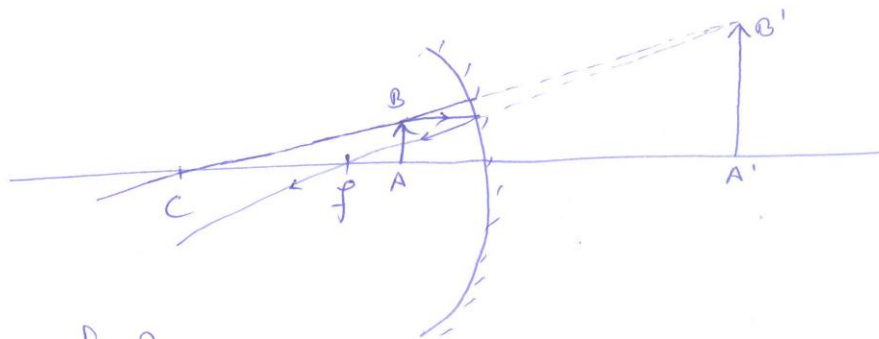


Nature of Image

Formed at infinity  
Very large in  
Size

Real & inverted

(C) when the object is placed at  $F$  &  $P$  -



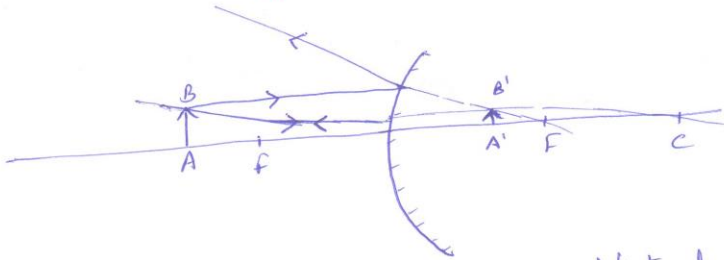
Nature of Image -

Formed behind the mirror  
Very large  
Virtual & erect

## Image formation by Convex mirror -

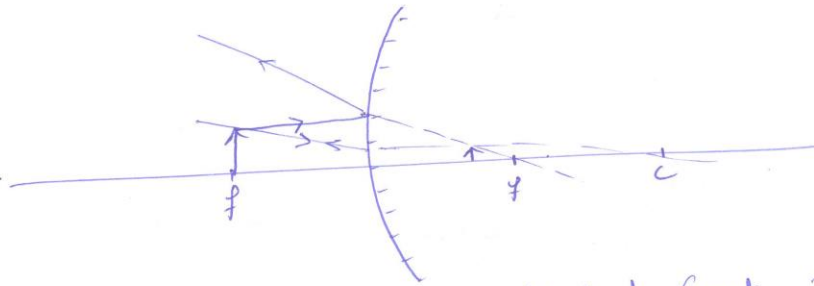
(2)

(1) When the object is placed beyond focus (F) -



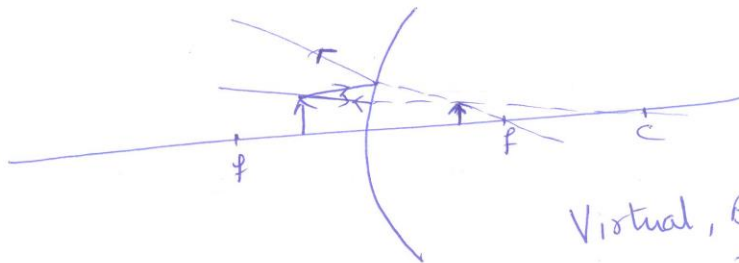
Nature of image - Virtual, Erect, Smaller than object.

(2) When the object is placed at focus -



Nature of image - Virtual, Erect, Diminished

(3) When the object is placed blw F & P -



Virtual, Erect,  
Diminished

### MIRROR FORMULA -

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{\text{Distance of object}} + \frac{1}{\text{Distance of image}} = \frac{1}{\text{focal length of mirror}}$$

### MAGNIFICATION

$$M = \frac{\text{Size of image}}{\text{Size of object}} = \frac{\text{Ht of image}}{\text{Ht of object}}$$

$$\frac{H'}{H} = -\frac{v}{u}$$

### Cases -

- ① when mag.  $M = 1$ ,  
Size of object = size of image.
- ② when mag.  $M > 1$   
then, image is magnified i.e.,  
Size of image is  $\square$  than size of object
- ③ when mag.  $M < 1$   
then, size of image is  $\square$  than size of object  
image is smaller than object

If  $M$  is  $-ve$ , image is inverted and real.

If  $M$  is  $+ve$ , image is virtual and erect.

### Sign Convention

#### Concave mirror

$$u = -ve$$

$$v = -ve \rightarrow \text{real image}$$

$$v = +ve \rightarrow \text{virtual image}$$

$$f = -ve$$

$$R(\text{or } C) = -ve$$

$$\text{Ht of object} = +ve$$

$$\text{Ht of image} = -ve$$

(real)

$$\text{Ht of virtual image} = +ve$$

#### Convex mirror

$$u = -ve$$

$$v = +ve$$

$$f = +ve$$

$$C = +ve$$

$$\text{Ht of image} = +ve$$

$$\text{Ht of object} = +ve$$