

UNIT-4 - CAMS

A rotating machine element, which gives reciprocating or oscillating motion to a second element is known as cam.

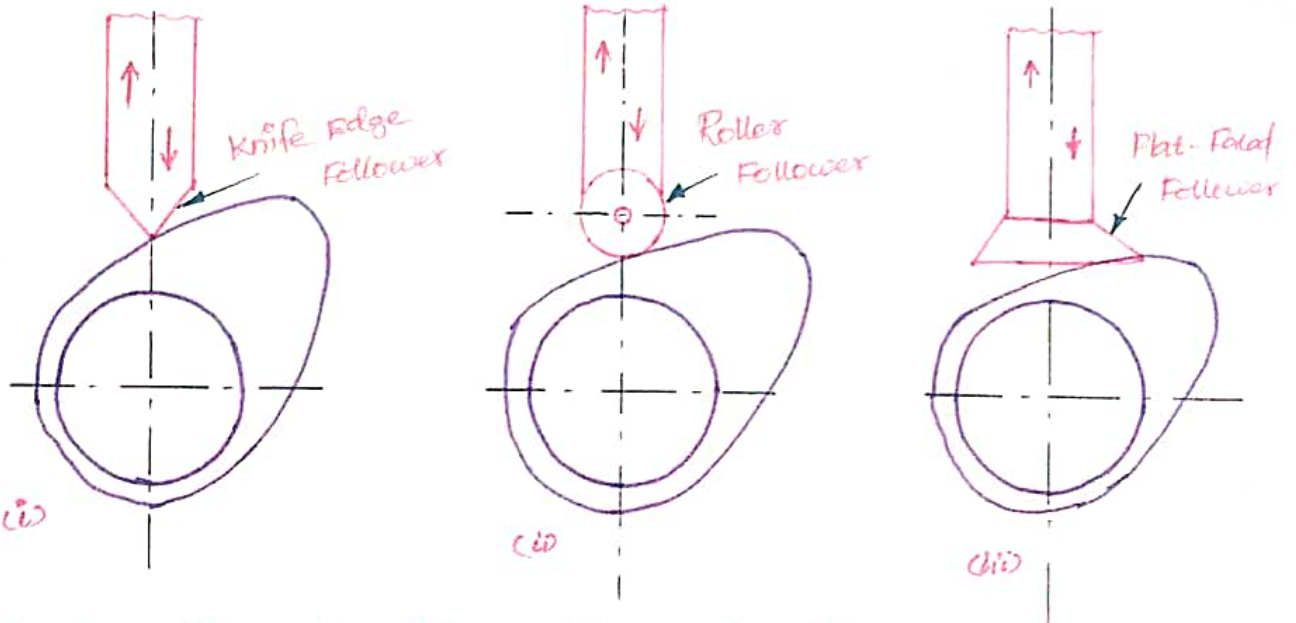
The second element is called as follower

Cam - driver member

Follower - driven member

Types of followers:

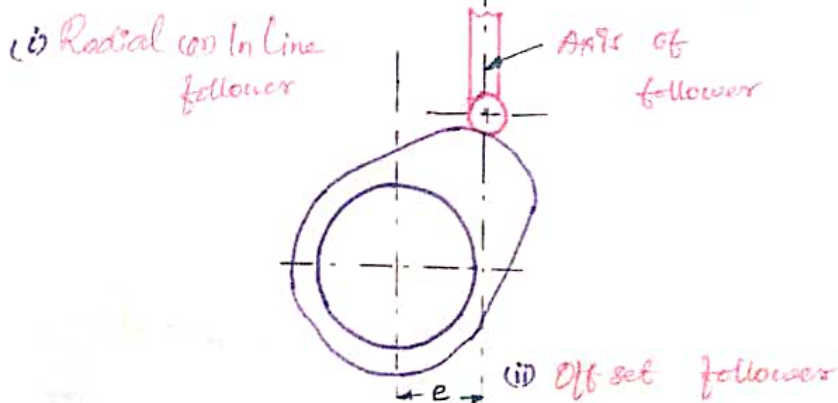
* According to their shape of that part which is in contact with the cam:



* According to the motion of the follower:

- (i) Reciprocating followers (Translatory followers)
- (ii) Oscillating followers

* According to the location of the axis of the follower:



e - off set distance

A cam is to give the following motion to a knife edge follower

J-328

HOME WORK - 02

1-31

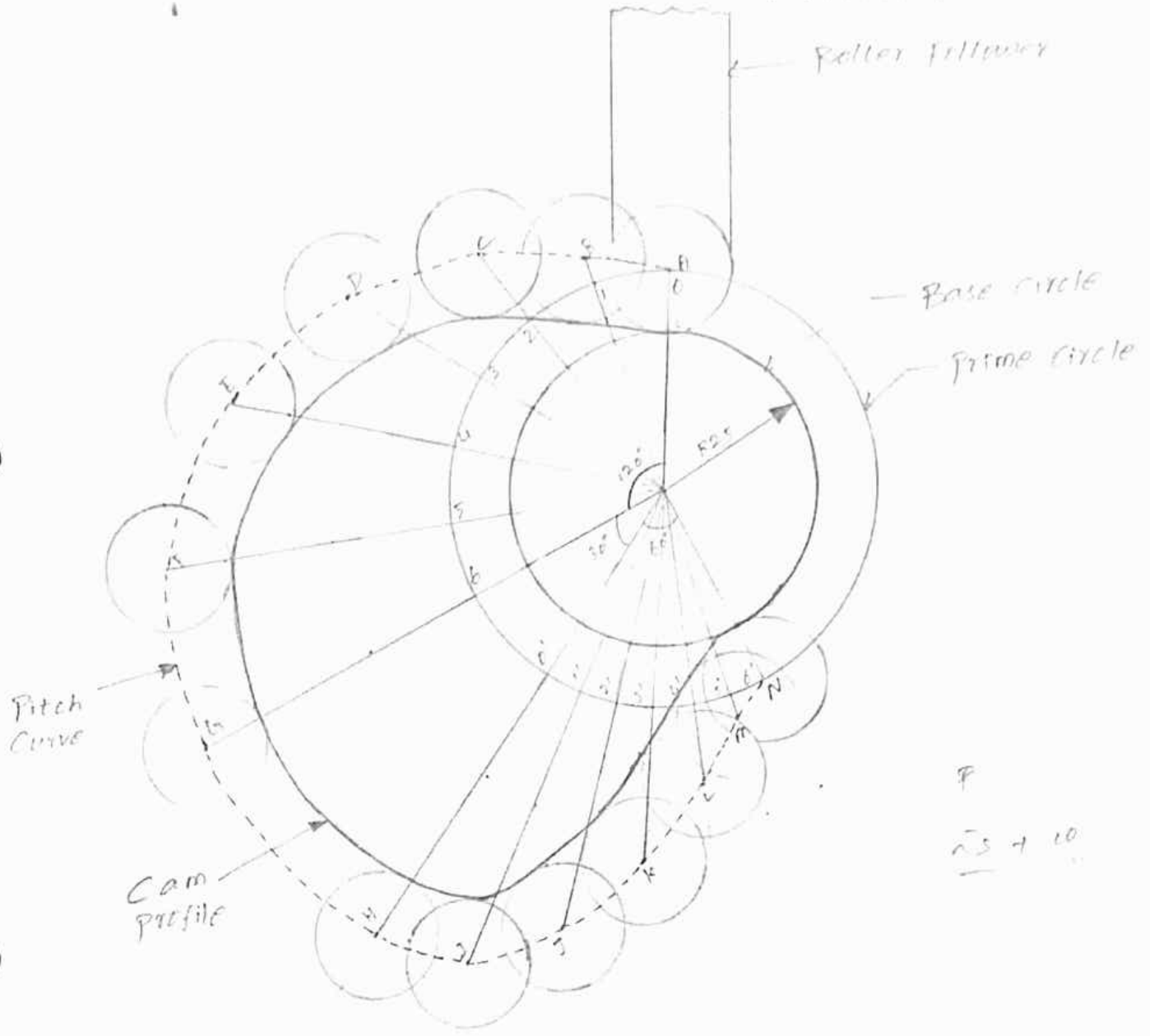
- a) It lifts the follower through 37.5 mm during its 60° rotation with SHM
- b) The follower remains at rest for the next 40° rotation of the cam.
- c) The follower then descends to its original during 90° rotation of the cam with SHM
- d) The follower remains at rest for the rest of the rotation

Draw the profile of the cam when

- 1) The line of stroke of the follower passes through the axis of the cam shaft.
- 2) The line of stroke is offset by 20mm from the axis of the cam shaft.

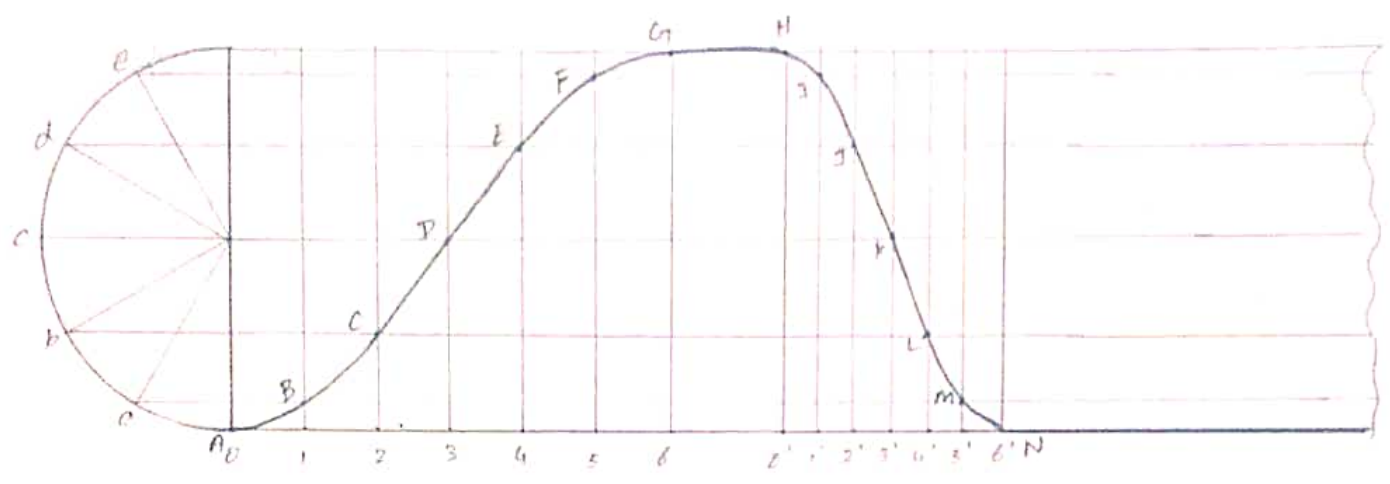
The least radius of the cam is 50 mm. if the cam rotates at 300 rpm find maximum velocity, acceleration of the follower during its ascent and descent.

(Prime Circle = Min. radius of Cam + $\frac{1}{2}$ of dia of roller)
 + radius of roller



$\frac{P}{25 + 10}$

RSK - T89



A Cam is to be designed for a knife edge follower with the following data.

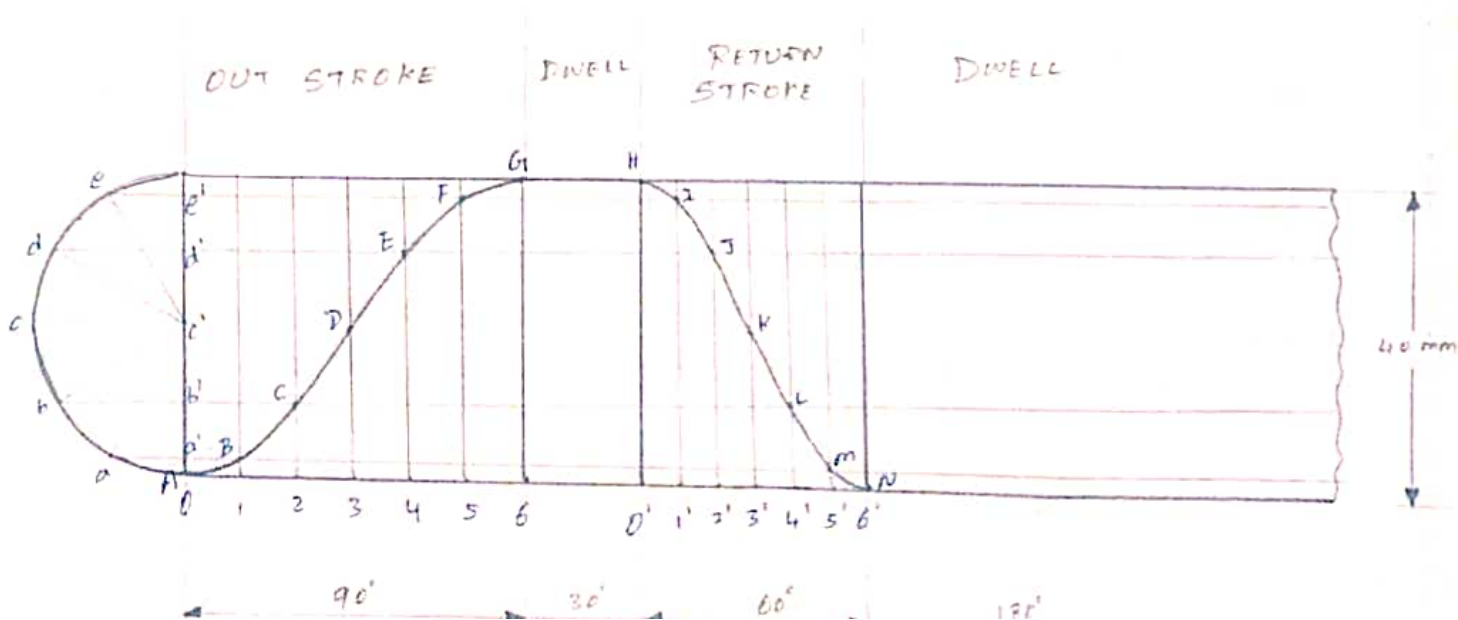
- 1) Cam lift = 40 mm during 90° of Cam rotation with Simple Harmonic Motion (SHM)
 - 2) Dwell for the next 30°
 - 3) During the next 60° of Cam rotation, the follower returns to its original position with SHM
 - 4) Dwell during the remaining 180°
- Draw the Cam profile when.

(a) The Cam Line of Stroke of the follower passes through the axis of the Cam shaft

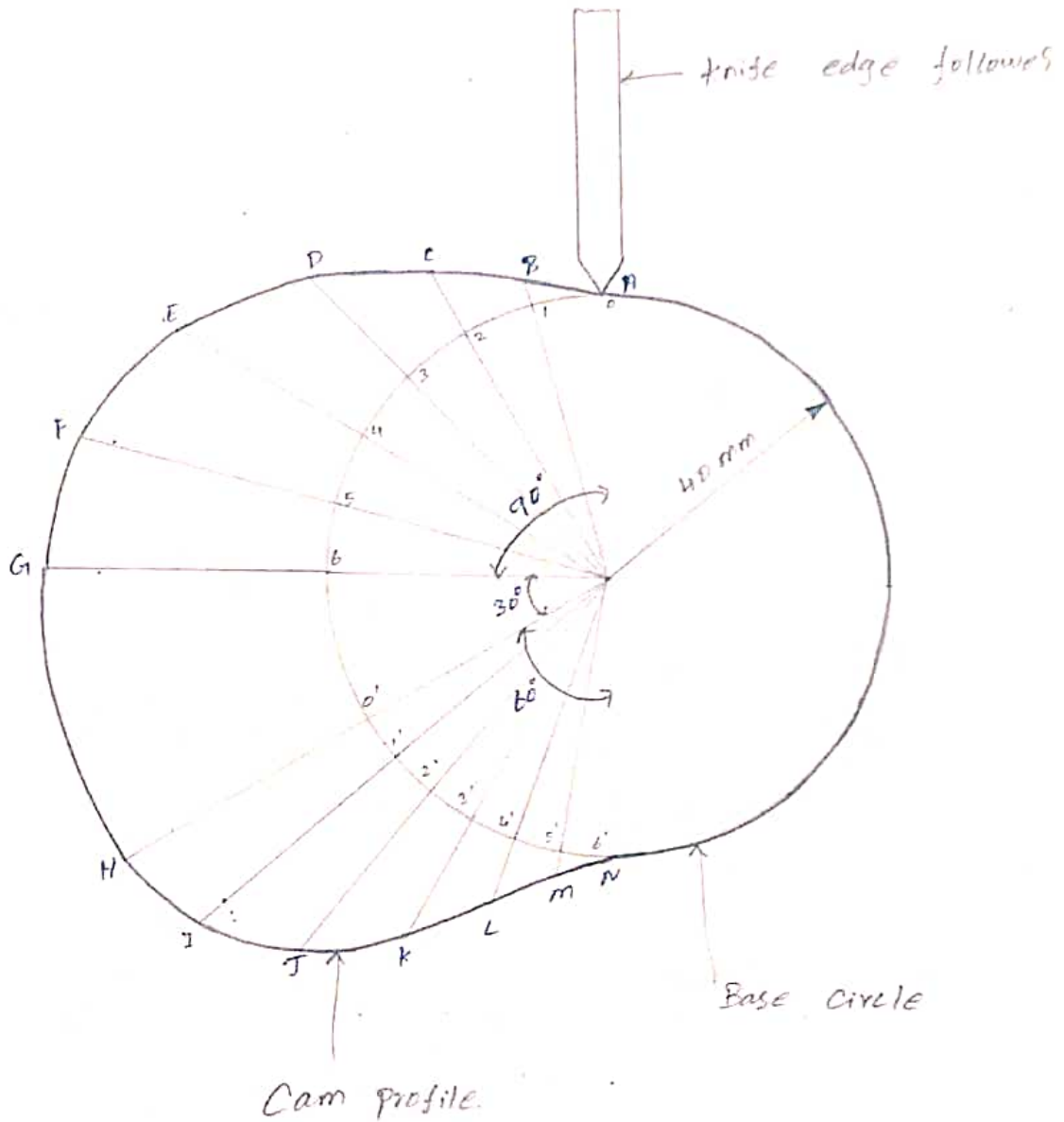
(b) The line of stroke is offset 20 mm from the axis of the Cam shaft.

The radius of the base circle is 40 mm. Determine the maximum velocity and acceleration of the follower during its ascent and descent, if the Cam rotates at 240 R.P.M

Displacement diagram.



(a) Profile of the Cam when the line of stroke of the follower passes through the axis of the shaft.



A Cam operating a knife edge follower has the following data

- Follower moves outwards through 10 mm during 60° of Cam rotation
- Follower dwells for the next 45°
- Follower returns to its original position during next 60°
- Follower dwells for the rest of the rotation

The displacement of the follower is to take place with uniform velocity during the both outward and return strokes. The least radius of the cam is 50 mm. Draw the profile of the cam when.

(i) The axis of the follower passes through the cam axis.

(ii) The axis of the follower is offset by 18 mm towards right from the cam axis.

A Cam is to give the following motion to a knife-edged follower

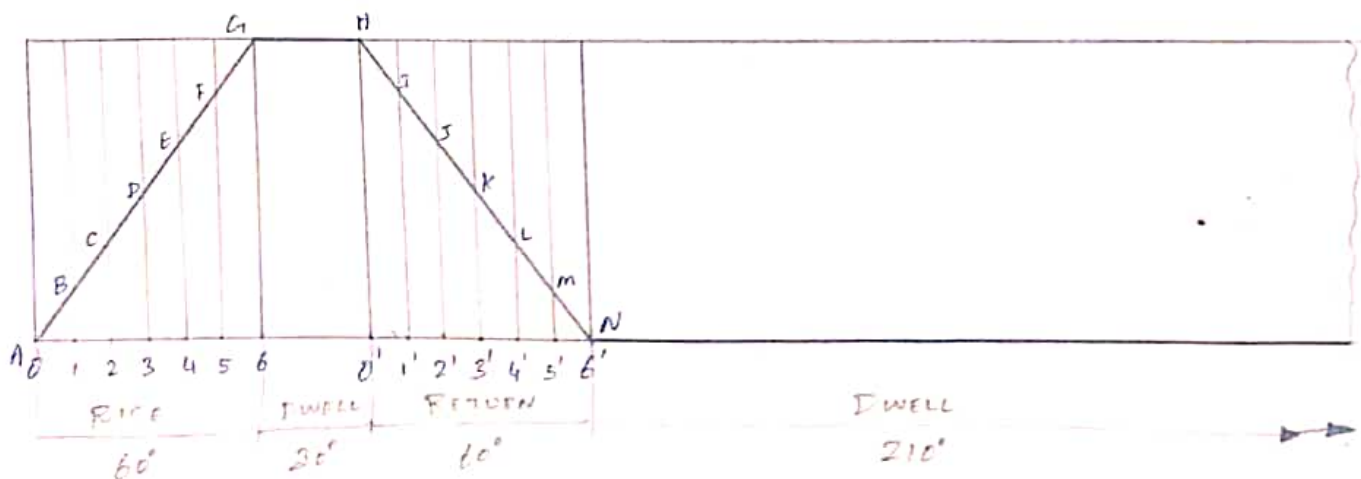
- 1) Out stroke during 60° of Cam rotation
- 2) Dwell for the next 30° of Cam rotation
- 3) Return stroke during next 60° of Cam rotation
- 4) Dwell for the remaining 210° of Cam rotation

The stroke of the follower is 40 mm and minimum radius of the Cam is 50 mm . The follower moves with uniform velocity during both the outstroke and return stroke. Draw the profile of the Cam when

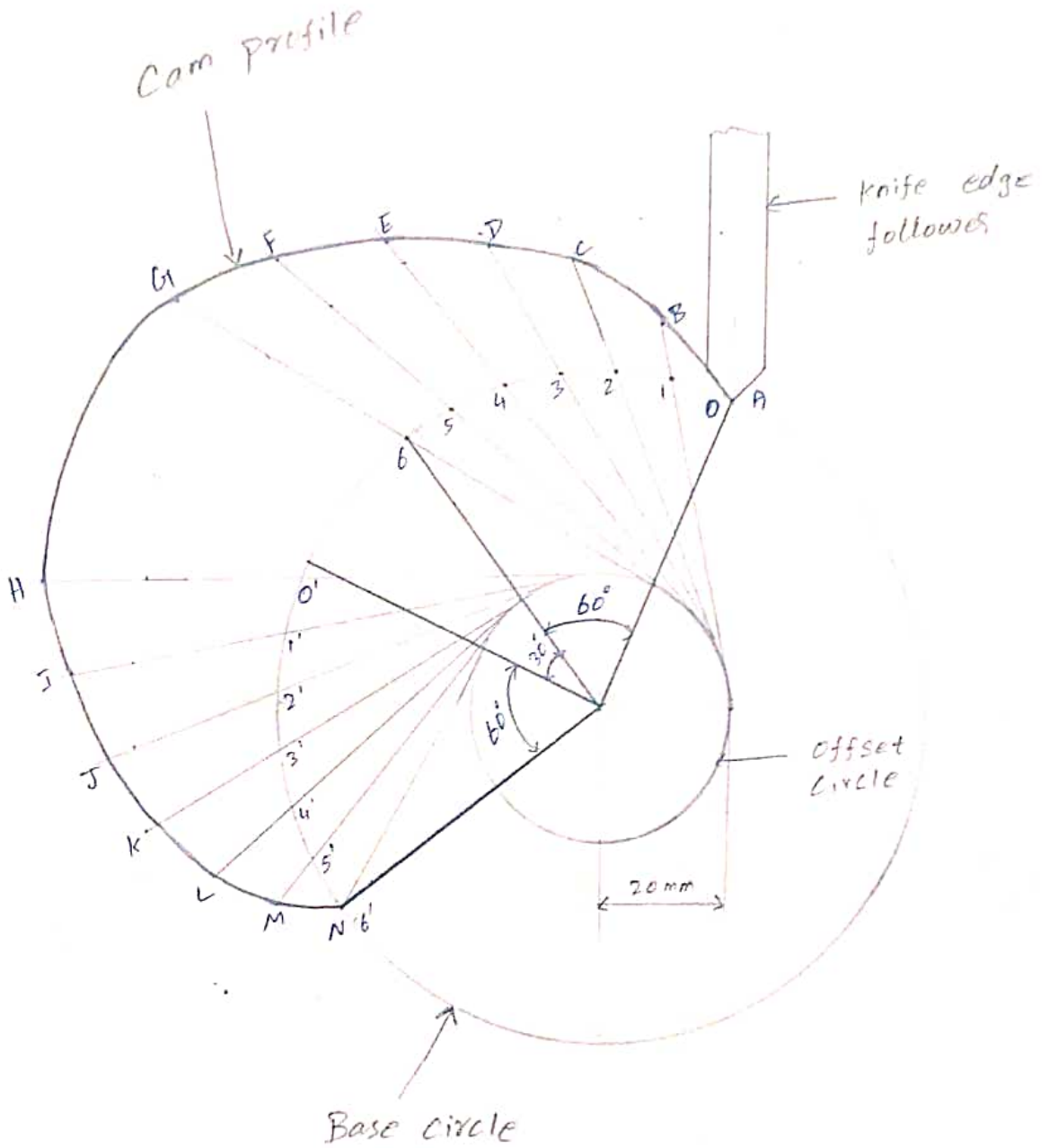
(a) The axis of the follower passes through the axis of the Cam shaft.

(b) The axis of the follower is offset by 20 mm from the axis of the Cam shaft.

DISPLACEMENT DIAGRAM



Axis of the follower is offset by 20 mm



① Axis of the follower passes through the axis of the Cam shaft

