

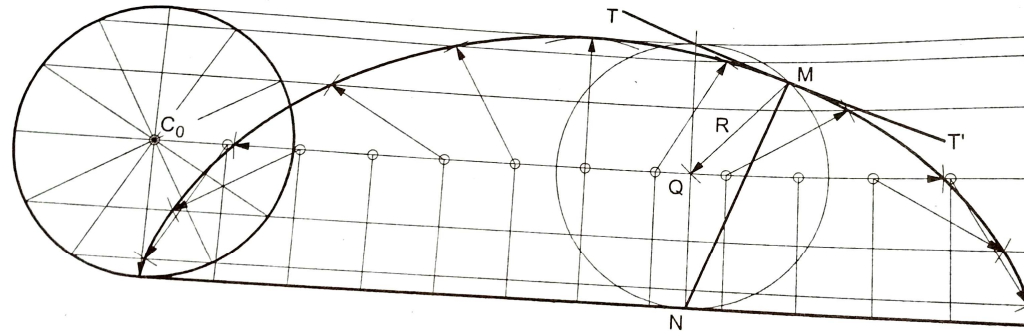
CW 2

ENGINEERING CURVES

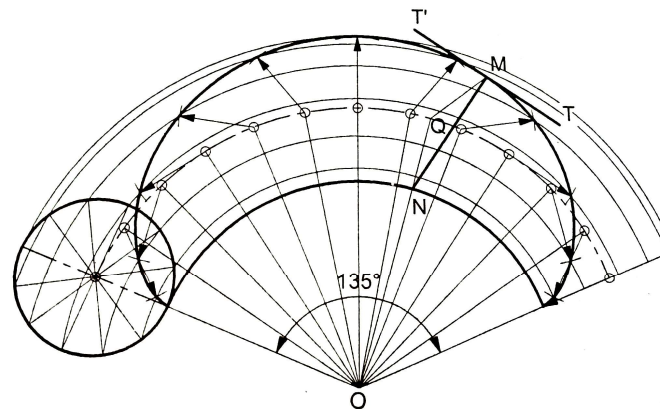
- Ex.1** A circle of 40 mm diameter rolls along a straight line without slipping. Draw the curve traced out by a point P on the circumference, for one complete revolution of the circle. Draw a tangent to the curve at a point on it 35 mm from the directing line.
- Ex. 2** Draw an epicycloid with rolling circle diameter 60 mm and directing circle diameter 160 mm. Draw tangent and normal at a point on the curve 120 mm from the center of the directing circle.
- Ex. 3** Draw a hypocycloid, rolling circle 60 mm diameter and directing circle 160 mm diameter. Draw a tangent and normal to it at a point 40 mm from the center of the directing circle.
- Ex. 4** Draw the involute of a pentagon having each side of 20 mm.
- Ex. 5** Draw an involute of a circle 120 mm diameter. Also draw a normal and tangent to it at a point 150 mm from the center of the circle.
- Ex. 6** A point P is 130 mm away from the fixed point pole O. A point P moves towards pole O and reaches the position p' in one convo where op' is 22 mm. The point P moves in such a way that its movement towards fixed point O, being uniform with its movement around fixed point pole o. Draw the curve traced out by the point P. Draw the tangent and normal to a point on the curve at a distance of 90 mm from the pole.

Solution

- Ex.1** A circle of 40 mm diameter rolls along a straight line without slipping. Draw the curve traced out by a point P on the circumference, for one complete revolution of the circle. Draw a tangent to the curve at a point on it 35 mm from the directing line.

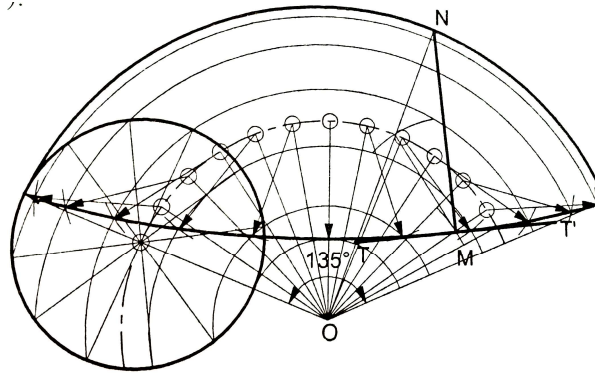


- Ex. 2** Draw an epicycloid with rolling circle diameter 60 mm and directing circle diameter 160 mm. Draw tangent and normal at a point on the curve 120 mm from the center of the directing circle.

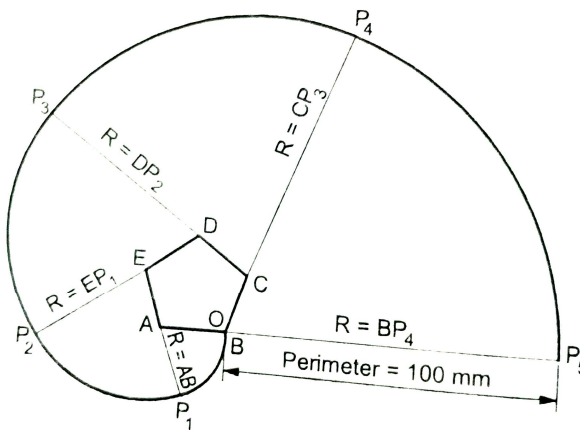


- Ex. 3** Draw a hypocycloid, rolling circle 60 mm diameter and directing circle 160 mm diameter. Draw a tangent and normal to it at a point

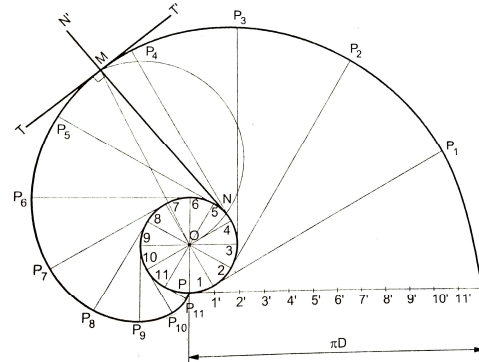
40 mm from the center of the directing circle.



Ex. 4 Draw the involute of a pentagon having each side of 20 mm.



Ex. 5 Draw an involute of a circle 120 mm diameter. Also draw a normal and tangent to it at a point 150 mm from the center of the circle.



Ex. 6 A point P is 130 mm away from the fixed point pole O. A point P moves towards pole O and reaches the position p' in one convolution where op' is 22 mm. The point P moves in such a way that its movement towards fixed point pole O, being uniform with its movement around fixed point pole O. Draw the curve traced out by the point P. Draw the tangent and normal to a point on the curve at a distance of 90 mm from the pole.

