Circles Ex 16.4 Q4

Answer :

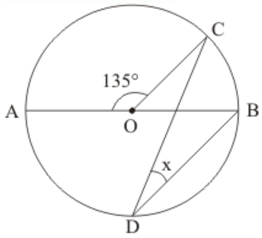
We have to find x in each figure.

(i) It is given that $\angle AOC = 135^0$

$\angle AOC + \angle COB = 180^\circ$ [Linear pair]

$\angle COB = 180^0 - 135^0$

$= 45^0$



As we know the angle subtended by an arc of a circle at the centre is double the angle subtended by it at any point on the remaining part of the circle.

Now, $x = \frac{1}{2}\angle COB = 22\frac{1}{2}^0$

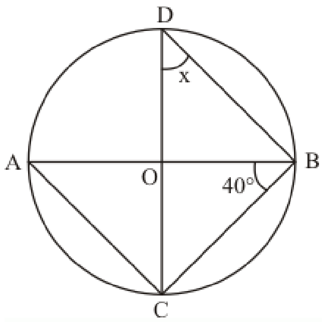
Hence $\boxed{x = 22\frac{1}{2}^0}$

(ii) $\angle CAB = \angle CDB = x$

As we know that $\angle CAB = \angle CDB$ [Angles in the same segment]

Now ΔCBD are isosceles triangle and line AB is diameter passing through centre.

So



$$\angle CBD + \angle BCD + \angle CDB = 180^0$$

$$80^0 + \angle CDB + \angle BCD = 180^0$$

$$2(\angle CDB) = 180^0 - 80^0$$

$$2(\angle CDB) = 100^0$$

$$\angle CDB = \frac{100^0}{2}$$
$$= 50^0$$

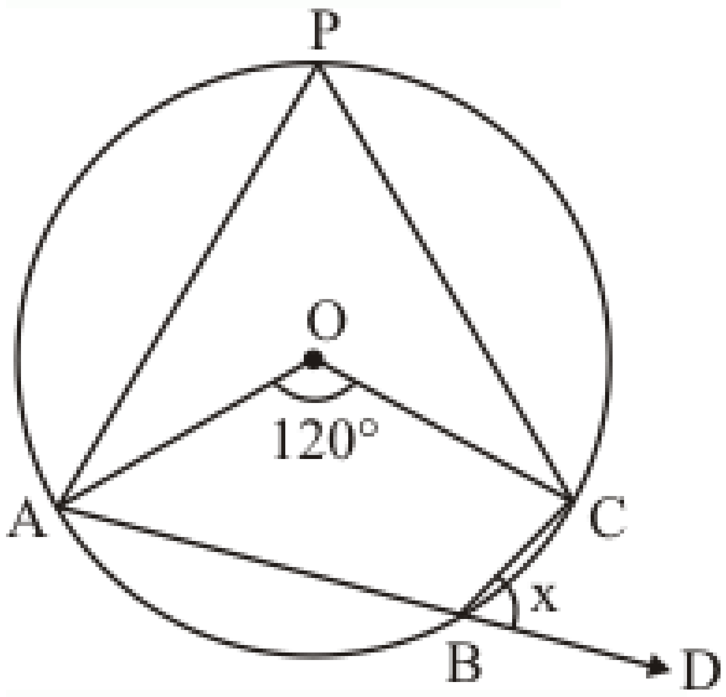
Hence

$$\boxed{x = 50^0}$$

(iii) It is given that

$$\angle AOC = 120^0$$

$$\angle ABC = \frac{1}{2}(\text{reflection})$$



$$\Rightarrow \angle AOC = \frac{1}{2}\left(360^0 - 120^0\right)$$

So $\angle AOC = 120^0$ ...... (1)

And $\angle ABC + \angle CBD = 180^0$

$\angle 120^0 + \angle CBD = 180^0$ ...... (2)

Then $\angle CBD = 60^0$

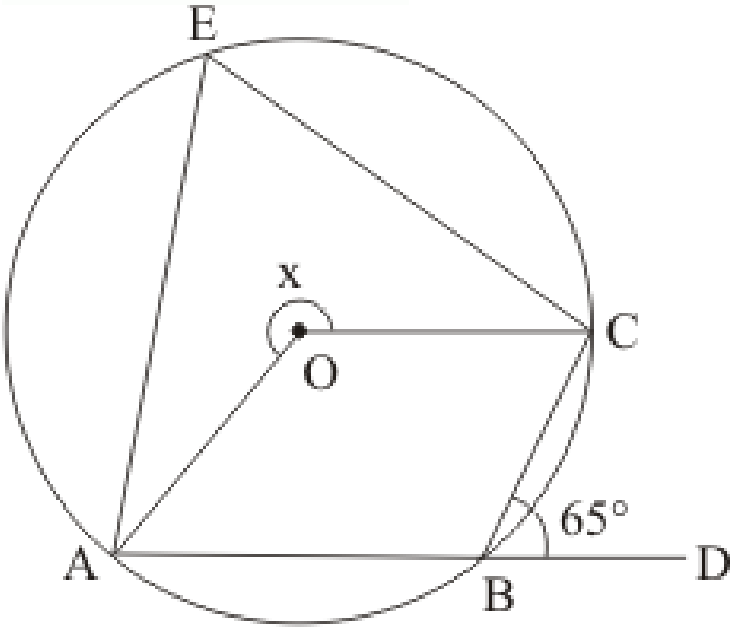
Hence $\boxed{x = 60^0}$

(iv) $\angle DBC = 65^0$

$\angle ABC + \angle DBC = 180^0$ (Linear angle)

$\angle ABC = 180^0 - 65^0$

$= 115^0$



And

$\angle x^0 = 2(\angle ABC)$

$= 2 \times 115^0$

$= 230^0$

Hence

$\boxed{x = 230^0}$

*********** END **********