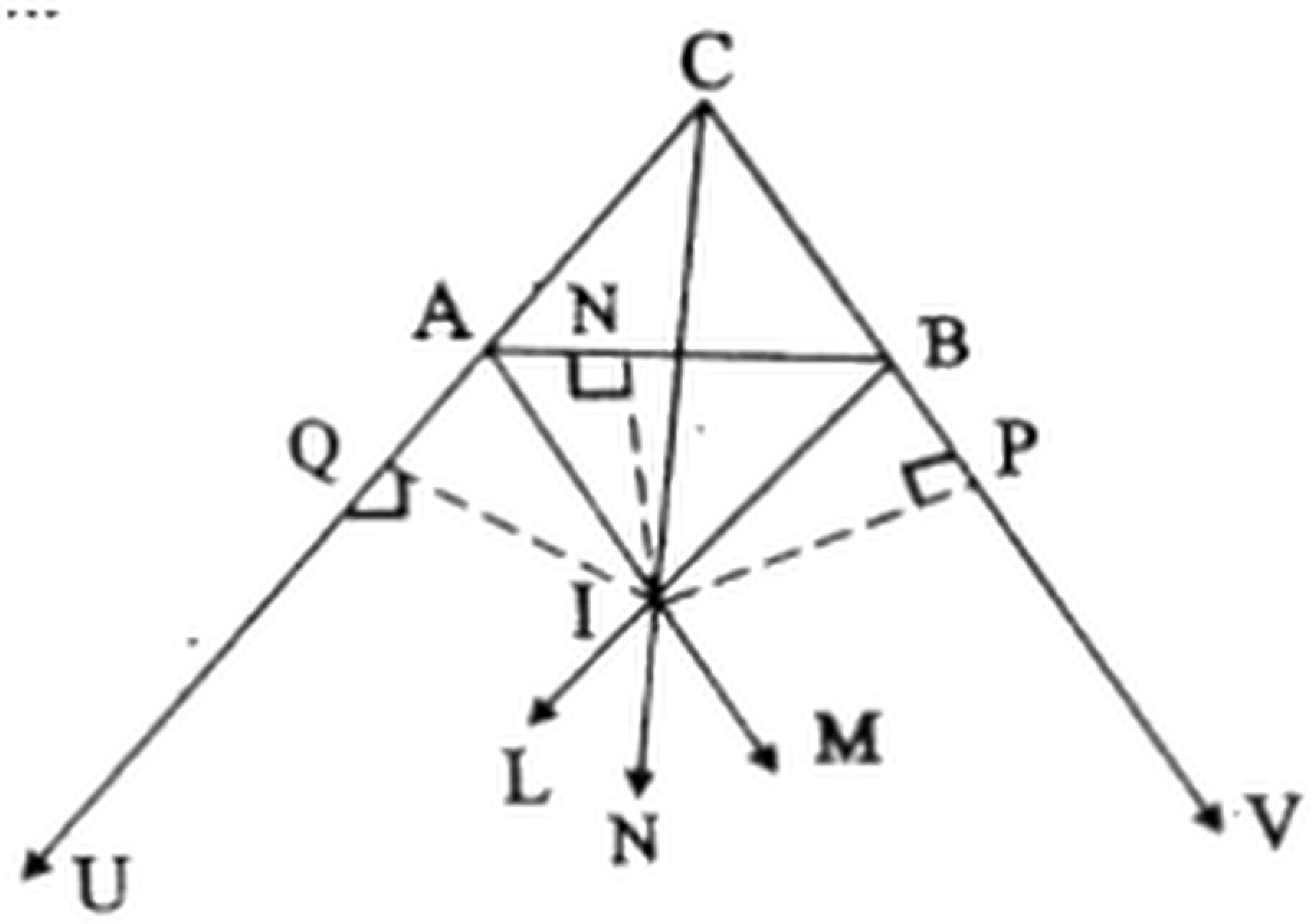
EXERCISE 12.3

Q1. Prove that the bisectors of the angles of base of an isosceles triangle intersect each other on its altitude.

Solution



Given

In ΔABC, sides $\overline{CA}$ and $\overline{CB}$ are produced.
$\overline{BL}$ is bisector of $\angle ABV$.
$\overline{AM}$ is bisector of $\angle BAU$.
$\overline{BL}$ and $\overline{AM}$ is intersect at I.
C is joined to I.

To Prove:
C is bisector of $\angle C$

Construction:
Draw $\overline{IP} \perp \overline{CV}$, $\overline{IQ} \perp \overline{CU}$ and $\overline{IN} \perp \overline{AB}$.

Proof

Statements	Reasons
$\overline{IN} \cong \overline{IP}$ (i)	$\overline{BI}$ is bisector of $\angle ABV$
$\overline{IN} \cong \overline{IQ}$ (ii)	$\overline{AI}$ is a bisector of $\angle BAU$
$\overline{IP} \cong \overline{IQ}$ (iii)	From (i) and (ii)
Now TP and IQ are perpendicular to CB and CA produced CI is bisector of angles $\angle C$	