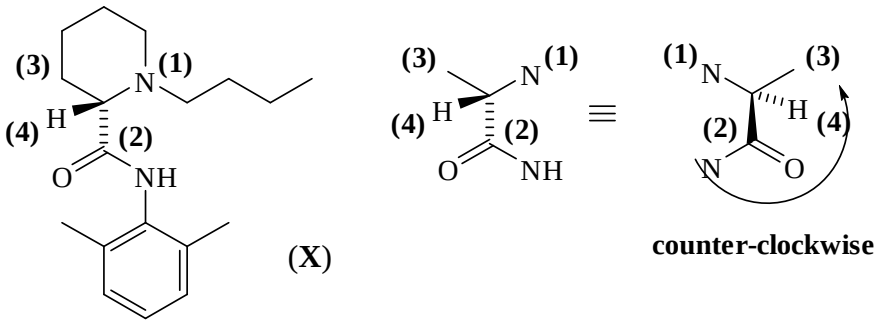
Marks 7

- Bupivacaine is the active molecule in some local anaesthetics. Of the two enantiomers, the one shown below (**X**) is the more effective.



What is the molecular formula of (**X**)?

$C_{18}H_{28}ON_2$

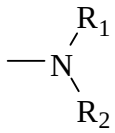
Calculate the *m*/*z* value for the major peak you would expect to see for the molecular ion in the high resolution mass spectrum.
[Atomic masses: $^{1}H = 1.0078$; $^{12}C = 12.0000$; $^{16}O = 15.9949$; $^{14}N = 14.0031$]

The molecular ion has *m* = molar mass:

Molar mass = (18 × 12.0000 (C) + 28 × 1.0078 (H)
+ 15.9949 (O) + 2 × 14.0031 (N)) g mol^{-1} = 288.2195 g mol^{-1}

Answer: **288.2195 g mol^{-1}**

List the substituents attached to the stereogenic centre in descending order of priority according to the sequence rule.

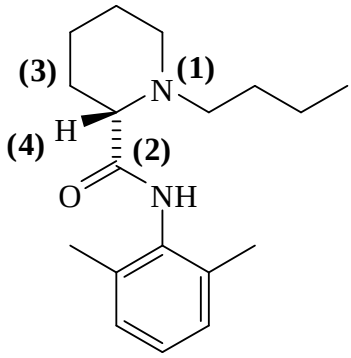
highest priority			lowest priority
	—CONHR	—CH_2—	—H

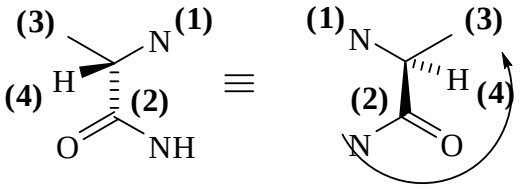
What is the absolute stereochemistry of **(X)**? Write (*R*) or (*S*).

(*S*)
(see above)

Name the functional groups present in (**X**).

(tertiary) amine, amide, aromatic ring





counter-clockwise