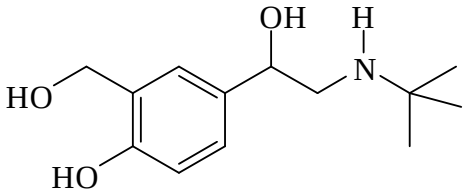
Marks 5

- The structure of salbutamol, a drug used to treat bronchospasms, is given below.



Give the molecular formula of salbutamol. **$C_{13}H_{21}O_3N$**

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: $^{1}H = 1.0078$; $^{12}C = 12.0000$; $^{16}O = 15.9949$; $^{14}N = 14.0031$]

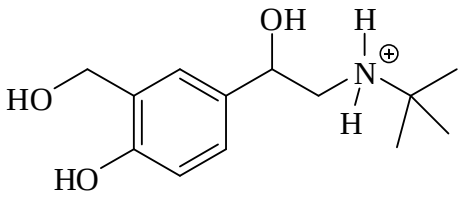
The molar mass of $C_{13}H_{21}O_3N$ is

13×12.0000 (C) + 21×1.0078 (H) + 3×15.9949 (O) + 1×14.0031 (N)

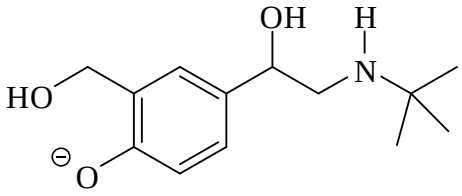
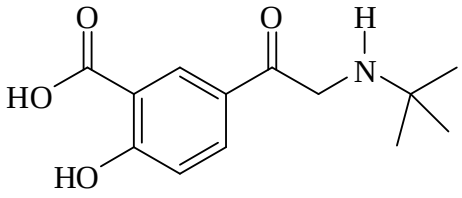
Answer: **239.1516**

Give the structure(s) of the major organic products formed when salbutamol is treated with the following reagents.

cold HCl (1 M)



NaOH (1 M)



$Cr_2O_7^{2\ominus}$ / $H^{\oplus}$