Mass Spectrometry Problems

1) Calculate the exact mass and average mass for these structures.

- **C_7H_16**
  - Exact Mass: 100.1252
  - Mol. Wt.: 100.2019

- **C_{13}H_{11}NO**
  - Exact Mass: 197.0841
  - Mol. Wt.: 197.2326

- **C_6H_5Br**
  - Exact Mass: 155.9575
  - Mol. Wt.: 157.0079

- **C_6H_8**
  - Exact Mass: 80.0626
  - Mol. Wt.: 80.1277

2) Match each structure to one of the following mass spectra.

- **a**
  - C_5H_{13}N
  - Exact Mass: 87.1

- **b**
  - C_6H_{10}O
  - Exact Mass: 86.1

- **c**
  - C_6H_{14}
  - Exact Mass: 86.1

- **d**
  - C_6H_{14}
  - Exact Mass: 86.1

- **e**
  - C_4H_9NO
  - Exact Mass: 87.1

- **f**
  - C_5H_{13}N
  - Exact Mass: 87.1

- **g**
  - C_5H_{10}O
  - Exact Mass: 86.1

- **c**
  - Mass = 86, unbranched, M-15 (CH_3)

- **b**
  - Mass = 86, unsaturated, M-29 (CH_2CH_3)
a. mass = 87, unbranched

b. mass = 86, ring, M-30 (CH\(_3\)CH\(_3\))

d. mass = 86, branched, large M-15 (CH\(_3\))

e. mass = 87, ring, M-30 (CH\(_3\)CH\(_3\))

f. mass = 87, branched, large M-15 (CH\(_3\))