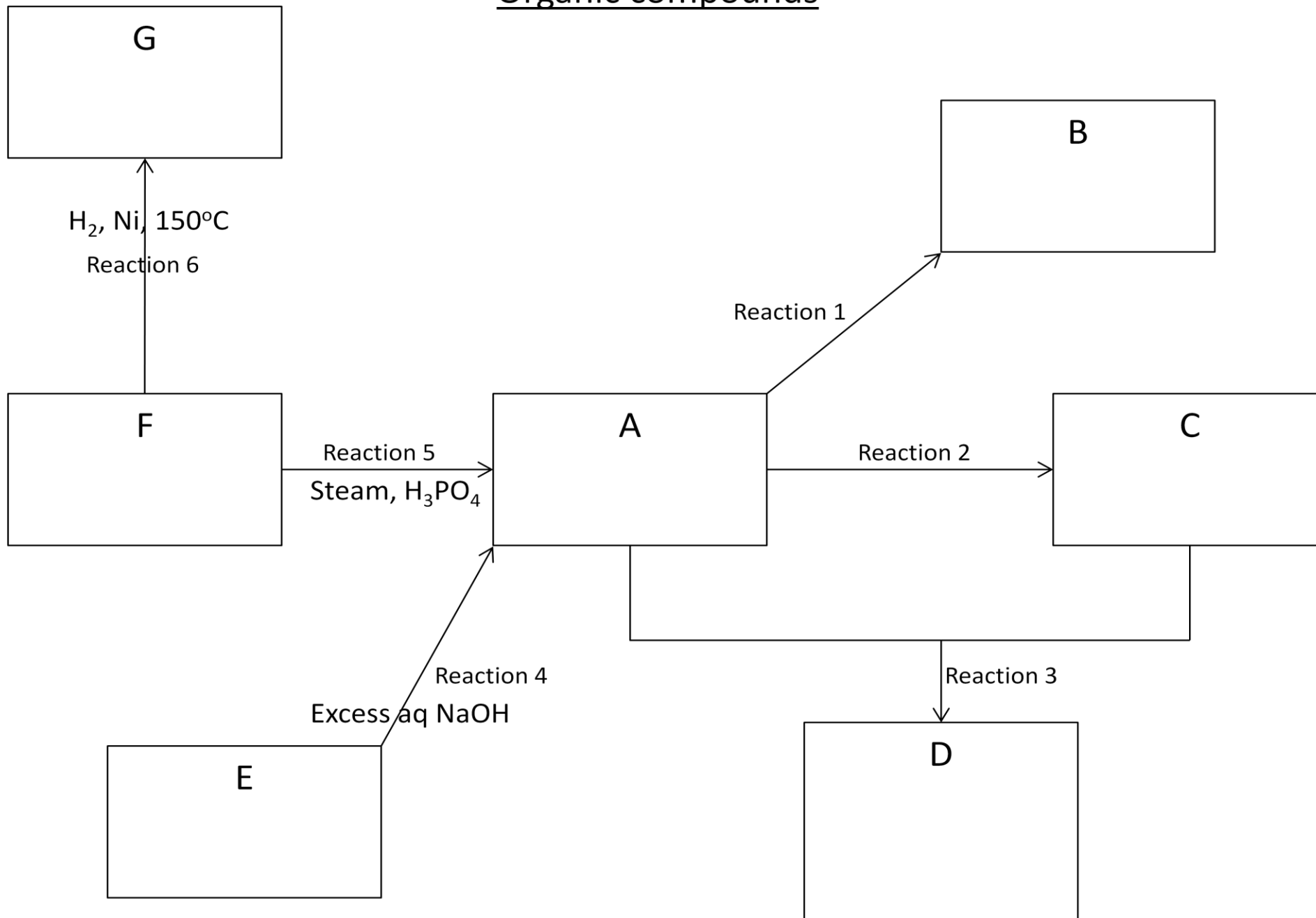


Organic compounds



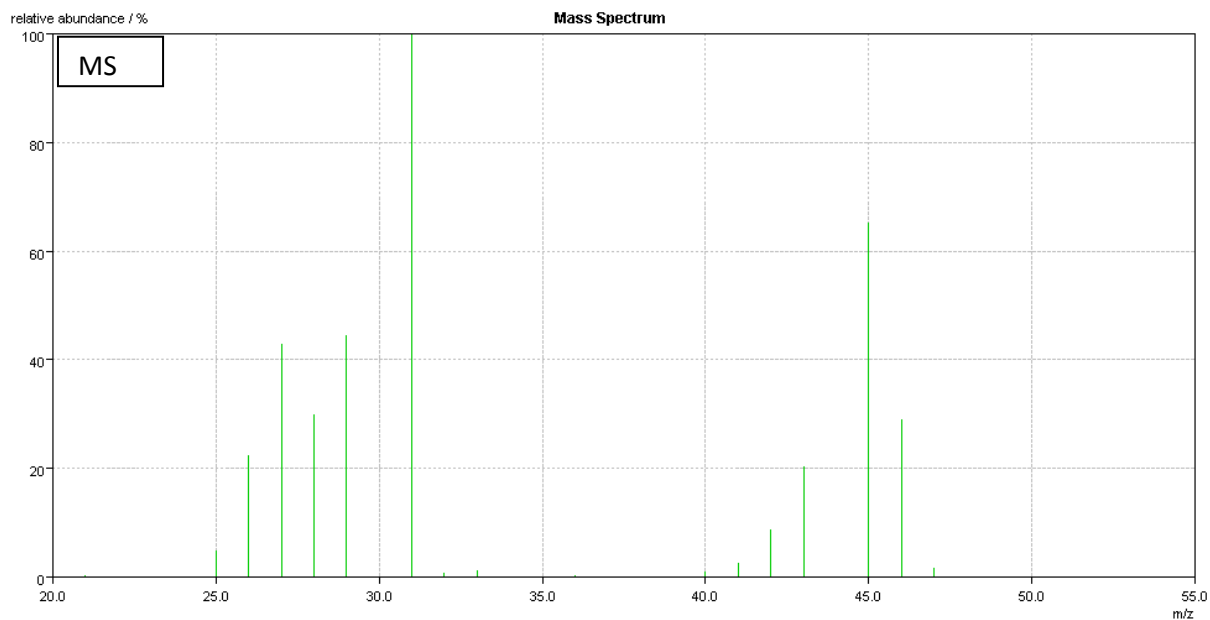
Answer the following questions: _____ /58

1. Identify compound A. Show your working and justify your answers. [7]

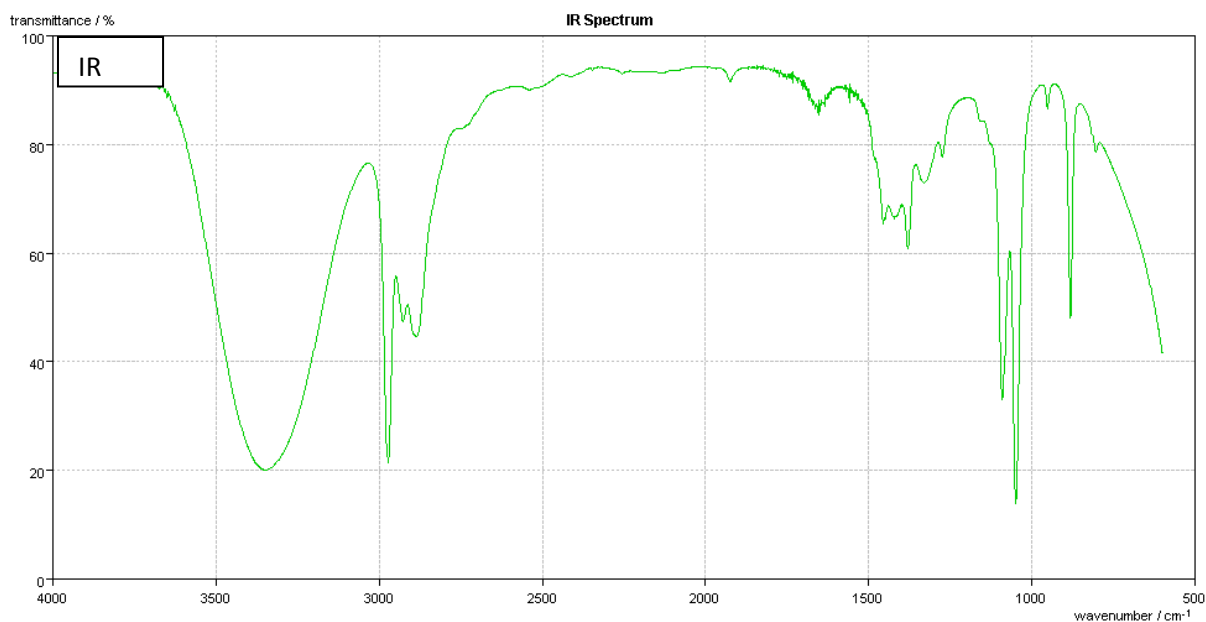
Composition:

C 52.17%; H 13.04%; O 34.78%

Mass spectra



Infra red spectrum



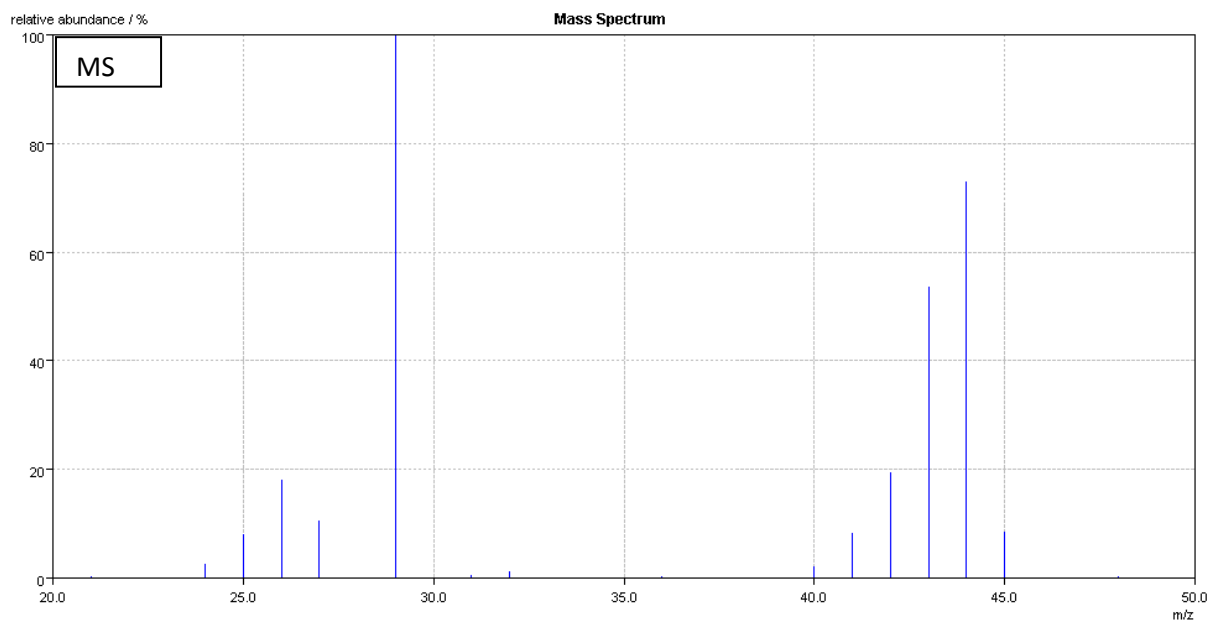
Use the information above to identify compound A:

2. Identify compound B. Show your working and justify your answers. [8]

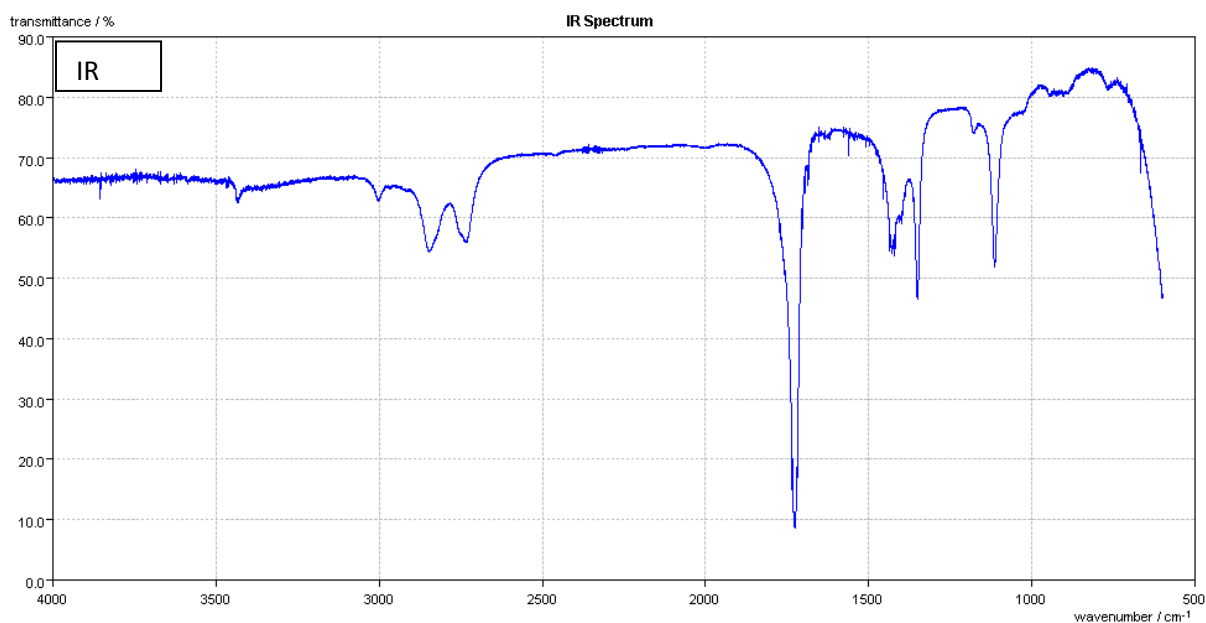
Composition:

C 54.55% H 9.09% O 36.36%

Mass spectra



Infra red spectrum



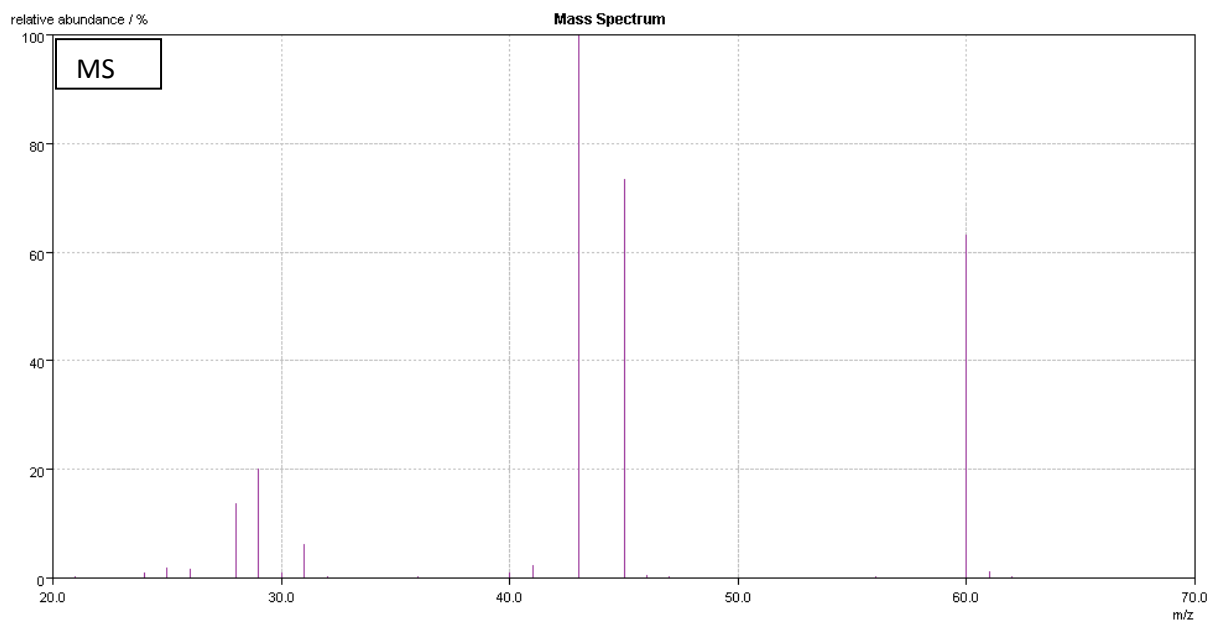
Use the information above to identify compound B:

3. Identify compound C. Show your working and justify your answers. [8]

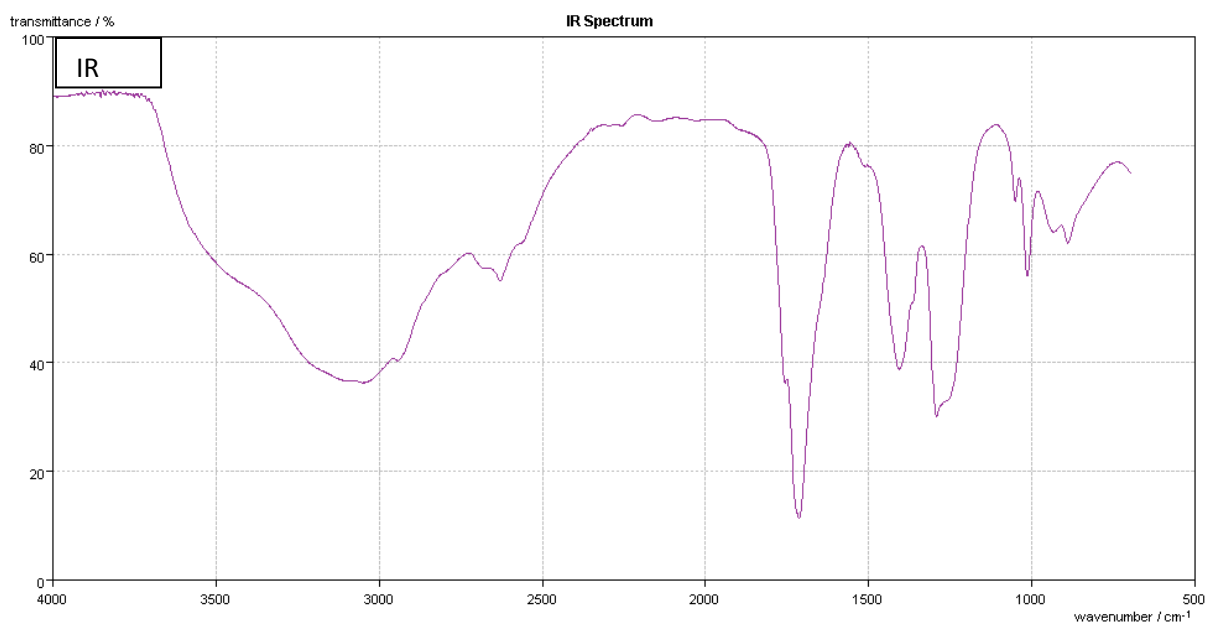
Composition:

C 40.00%; H 6.67%; O 53.33%

Mass spectra



Infra red spectrum



Use the information above to identify compound C:

Questions:

4. This question is about reaction 1:

- a. Write a balanced chemical reaction. [1]

- b. 2.30g of A reacted with an excess of the oxidising mixture to produce 2.00g of B. Calculate the % yield for this reaction. [5]

- c. Calculate the atom economy. [1]

- d. What is the oxidising mixture and state any colour changes you would see. [3]

- e. How would you make B? Explain how this differs from reaction 2. [2]

5. This question is about reaction 3:

- a. Write a balanced chemical reaction. [1]

- b. 2.30g of A reacted with 3.50g of C. 4.00g of D was made. Calculate the % yield for this reaction. [6]

- c. Calculate the atom economy. [1]

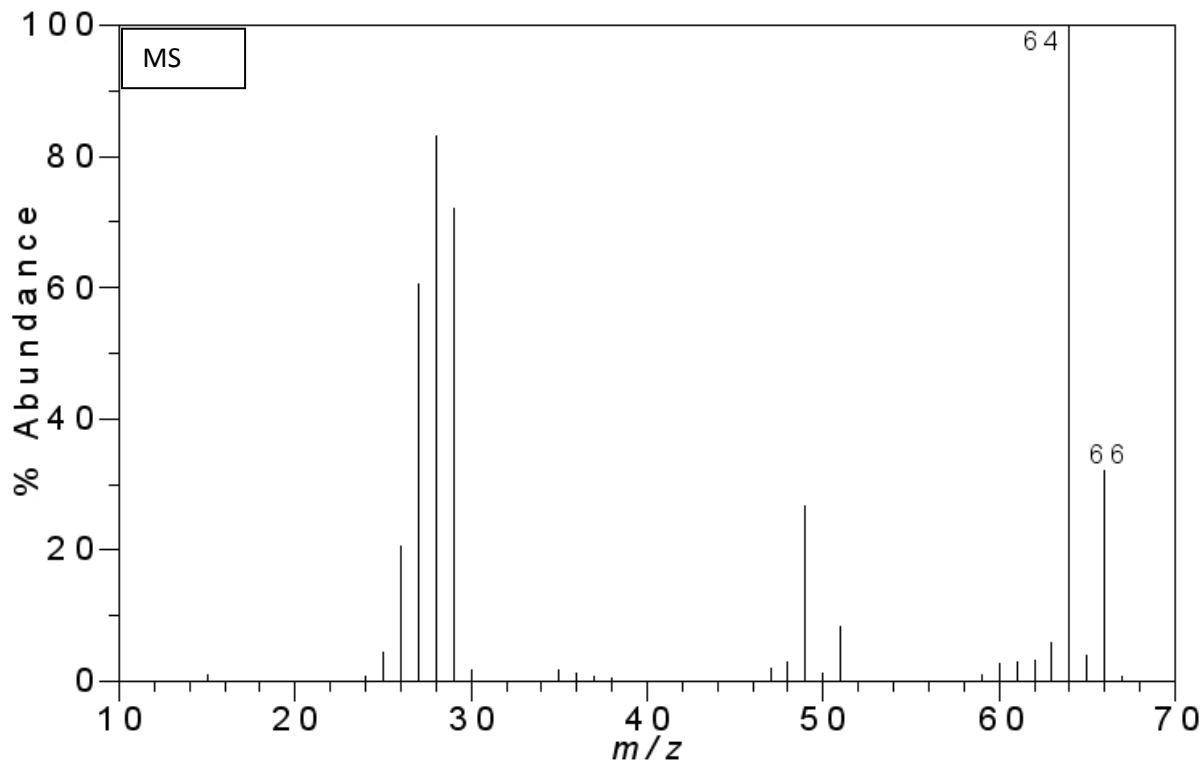
6. This question is about compound E

a. Identify compound E. Show your working and justify your answers. [1]

Composition:

C 37.21%; H 7.75%; Cl 55.04%

Mass spectra



b. Explain the relatively large molecular ion peaks at 64 and 66? [1]

c. Use your knowledge from unit 1 to explain the actual Mr of E [1]

7. Use your knowledge of organic chemistry to identify F and G. [2]

8. Use your knowledge of organic chemistry to identify the types of reactions in reactions 4,5 and 6. [3]

9. Which of the reactions 4,5 and 6 will have the highest atom economy? Explain your answer. [2]

10. Pick one of the reactions, 1 – 6 to draw a mechanism. [5]