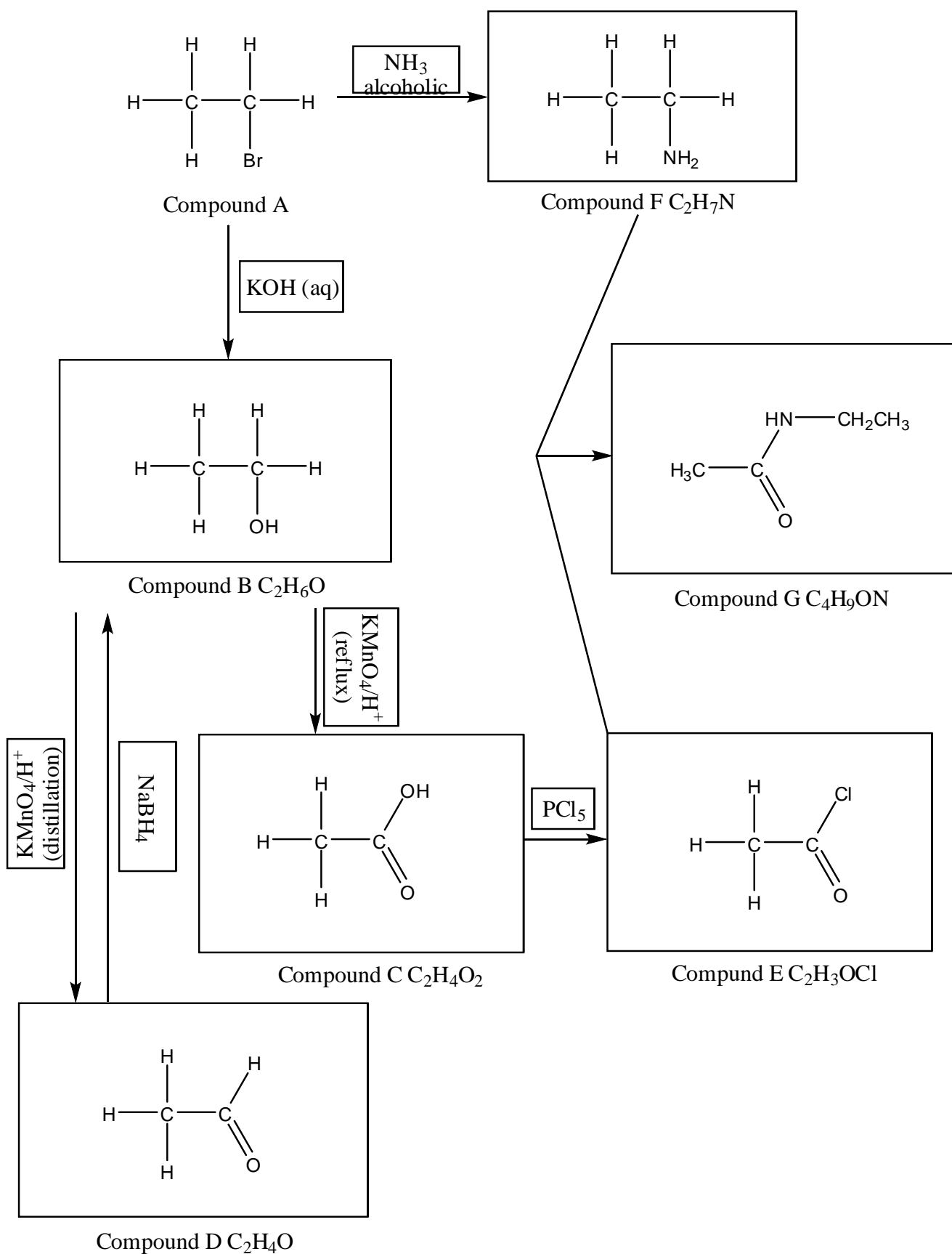


Question One- Complete the reaction scheme



Question Two

Complete the table below, Compound A as an example

	Name	MS m/z	Isotope peak?	Number of ¹³ C peaks and region	IR Functional group and peaks
A	1-bromo ethane	108	1 : 1 110	2 carbon environments ~40 – 45 ppm ~10 – 15 ppm	C-H 3100 – 2800 cm ⁻¹
B	Ethanol	46	none	2 carbon environments ~50 – 65 ppm ~20 – 30 ppm	C-H 3100 – 2800 cm ⁻¹ C-O 1250 – 1050 cm ⁻¹ -OH 3700 – 3200 cm ⁻¹
C	Ethanoic acid	60	None	2 carbon environments ~170 – 185 ppm ~20 – 30 ppm	C-H 3100 – 2800 cm ⁻¹ C=O 1850 – 1600 cm ⁻¹ C-O 1250 – 1050 cm ⁻¹ OH 3600 – 2500 cm ⁻¹
D	Ethanal	44	None	2 carbon environments ~190 – 200 ppm (<u>C</u> =O) ~20 – 30 ppm (<u>C</u> -C=O)	C-H 3100 – 2800 cm ⁻¹ C=O 1850 – 1600 cm ⁻¹
E	Ethanoyl chloride	78	3 : 1 80	2 carbon environments ~190 – 200 ppm (<u>C</u> =O) ~20 – 30 ppm (<u>C</u> -C=O)	C-H 3100 – 2800 cm ⁻¹ C=O 1850 – 1600 cm ⁻¹
F	Amino ethane	45	None	2 carbon environments ~37 – 45 ppm (C-N) ~10 – 15 ppm (C-R)	N-H 3500 – 3100 cm ⁻¹ C-H 3100 – 2800 cm ⁻¹
G	N-ethyl ethanamide	87	None	4 carbon environments ~190 – 200 ppm (<u>C</u> =O) ~20 – 30 ppm (<u>C</u> -C=O) ~37 – 45 ppm (C-N) ~10 – 15 ppm (C-R)	N-H 3500 – 3100 cm ⁻¹ C-H 3100 – 2800 cm ⁻¹ C=O 1850 – 1600 cm ⁻¹