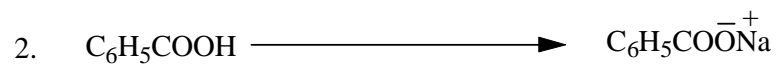
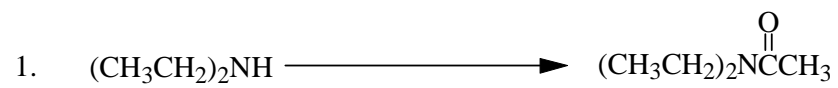


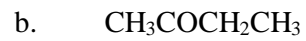
- I. A compound ( $C_7H_5N$ ) shows its principal infrared absorption at 3050, 2220, 1620 and  $1450\text{ cm}^{-1}$ . The mass spectrum displayed a peak at  $m/z$  103 (35%) and a prominent peak at  $m/z$  76 (100%). What is the structure of this compound? (4 M).

- II. Are the peaks indicated in the following mass spectrum consistent with the structure of ethyl butyl ether or methyl n-pentyl ether? Justify your answer. (3.5 M)

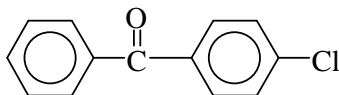
III. Explain how would you monitor the progress of each of the following reaction sequence by infrared spectroscopy. (4.5 M).



IV. Which of the following compounds undergoes McLafferty rearrangement? Include the fragmentation pattern which shows the formation of such rearrangement ion on your answer. (4 M)



- V. The mass spectral data of *p*-chlorobenzophenone are tabulated below. Use these data to identify the corresponding fragment ions (include the fragmentation pattern on your answer). (4 M).



m/z	%
218	6
216	18
141	15
139	45
113	15
111	5
105	100