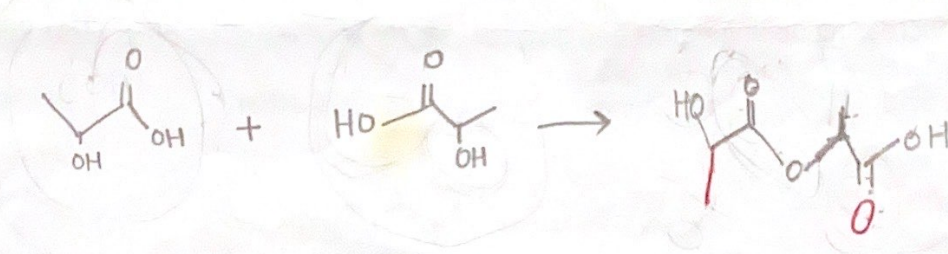


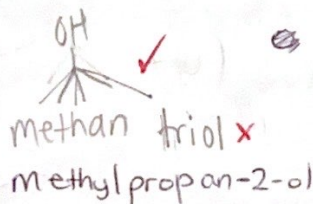
4. Lactic acid (2-hydroxypropanoic acid), produced by bacterial culture in yogurt, contains a hydroxyl group and a carboxyl group in each molecule. Draw a structure of two repeating units of a condensation polymer of lactic acid molecules. [3 marks]



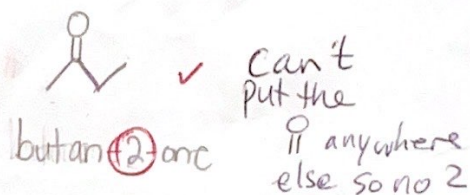
Knowledge & Understanding [10 marks]

5. Draw the structure and provide a name for each of the following. [10 marks]

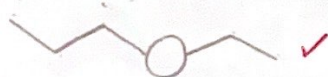
- (a) A tertiary alcohol with the formula $C_4H_{10}O$.



- (d) A ketone with the formula C_4H_8O .

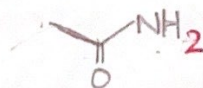


- (b) An ether with the formula $C_5H_{12}O$.

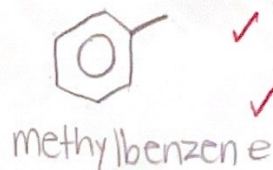


- (e) An ester with the formula C_2H_5ON .

amide



- (c) An aromatic compound with the formula C_7H_8 .

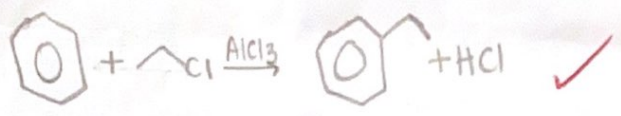


ethanamide

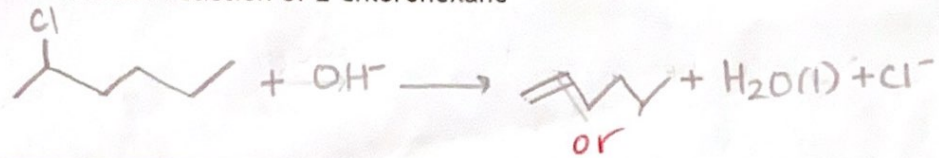
Inquiry [27 marks] ¹⁵

6. Write the chemical equations to illustrate the following reactions. [15 marks]

(a) an alkylation reaction of benzene



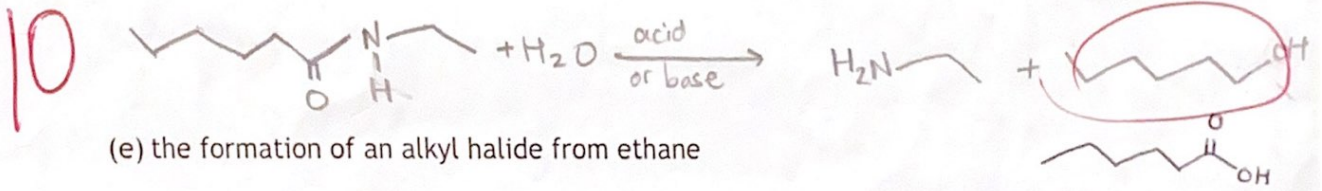
(b) an elimination reaction of 2-chlorohexane



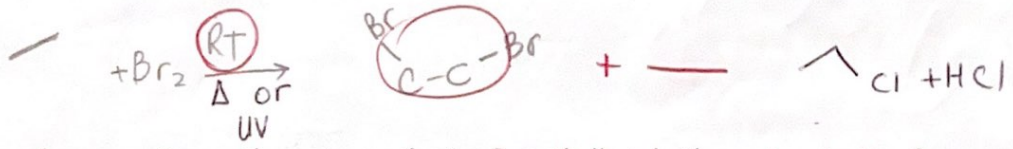
(c) the preparation of methanal from an alcohol



(d) the hydrolysis of N-ethyl hexanamide



(e) the formation of an alkyl halide from ethane



7. Describe a reaction pathway to synthesize 2-methylbutyl ethanoate, starting from ethane. Include all pertinent conditions. Show all reactants and products using structural diagrams. [12 marks]

