Answer all questions completely. Put a box around the final solution. Put your name on it. Show your work.

1. Assuming odd byte parity, generate the parity bits for the following message (20 points)

   0000 101x 0110 011x 1101 001x 0010 111x

2. For the following Boolean expression, make the Karnaugh map and use it to write the minimized POS expression: AB' + CA'B + (ABC)' (30 points)

3. Implement a circuit for the following Boolean expression: AB' + CA'B + (ABC)' (20 points)

4. Given the 4-bit parallel adder in Figure 1, put the following inputs on the diagram and give all carry bits and summation bits. A = 5, B = 9, $C_0$=0. (30 points)
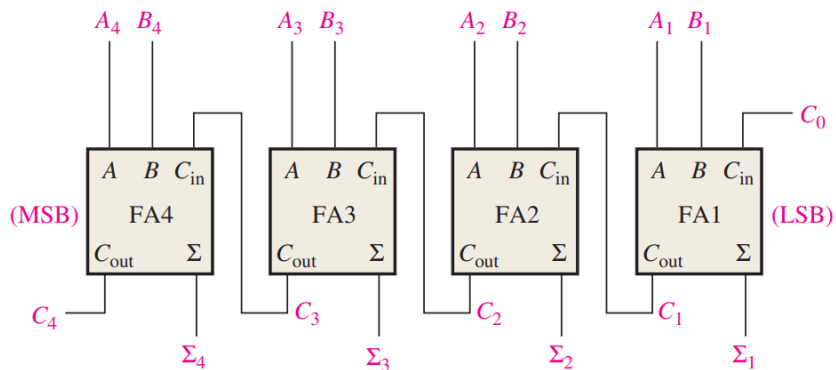


Figure 1