**(a) Shift-register implementation**

|  | $C_4$ | $C_3$ | $C_2$ | $C_1$ | $C_0$ | $C_4 \approx C_3 \approx I$ | $C_4 \approx C_1 \approx I$ | $C_4 \approx I$ | $I = $ input |
|---|---|---|---|---|---|---|---|---|---|
| Initial | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 |
| Step 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 |
| Step 2 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| Step 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 |
| Step 4 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 |
| Step 5 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 |
| Step 6 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 |
| Step 7 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 |
| Step 8 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 |
| Step 9 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 1 |
| Step 10 | 0 | 1 | 1 | 1 | 0 |  |  |  |  |

Message to be sent

**(b) Example with input of 1010001101**

**Figure 6.6  Circuit with Shift Registers for Dividing by the Polynomial $X^5 + X^4 + X^2 + 1$**