

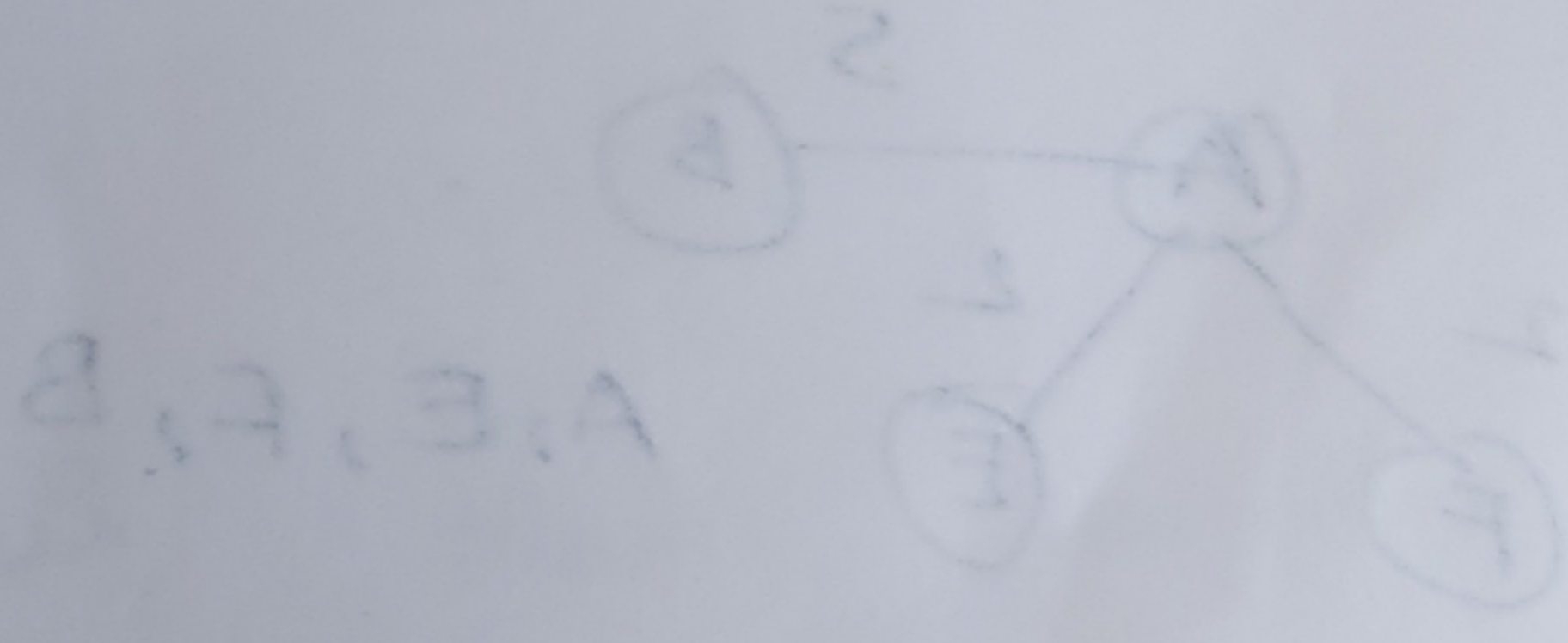
Worksheet -1

1. 11100011

$$x^3 + 1 = 1001$$

$$\begin{array}{r}
 1001 \overline{) 11100011000} \\
 \underline{1001 \downarrow} \\
 1110 \\
 \underline{1001 \downarrow} \\
 01110 \\
 \underline{1001 \downarrow} \\
 01111 \\
 \underline{1001 \downarrow} \\
 1101 \\
 \underline{1001 \downarrow} \\
 1000 \\
 1001 \\
 \hline
 000100
 \end{array}$$

$$\begin{array}{r}
 1001 \overline{) 111000111100} \\
 \underline{1001 \downarrow} \\
 01110 \\
 \underline{1001 \downarrow} \\
 01110 \\
 \underline{1001 \downarrow} \\
 1111 \\
 \underline{1001 \downarrow} \\
 1001 \\
 \hline
 1001 \\
 1001 \\
 \hline
 0000
 \end{array}$$



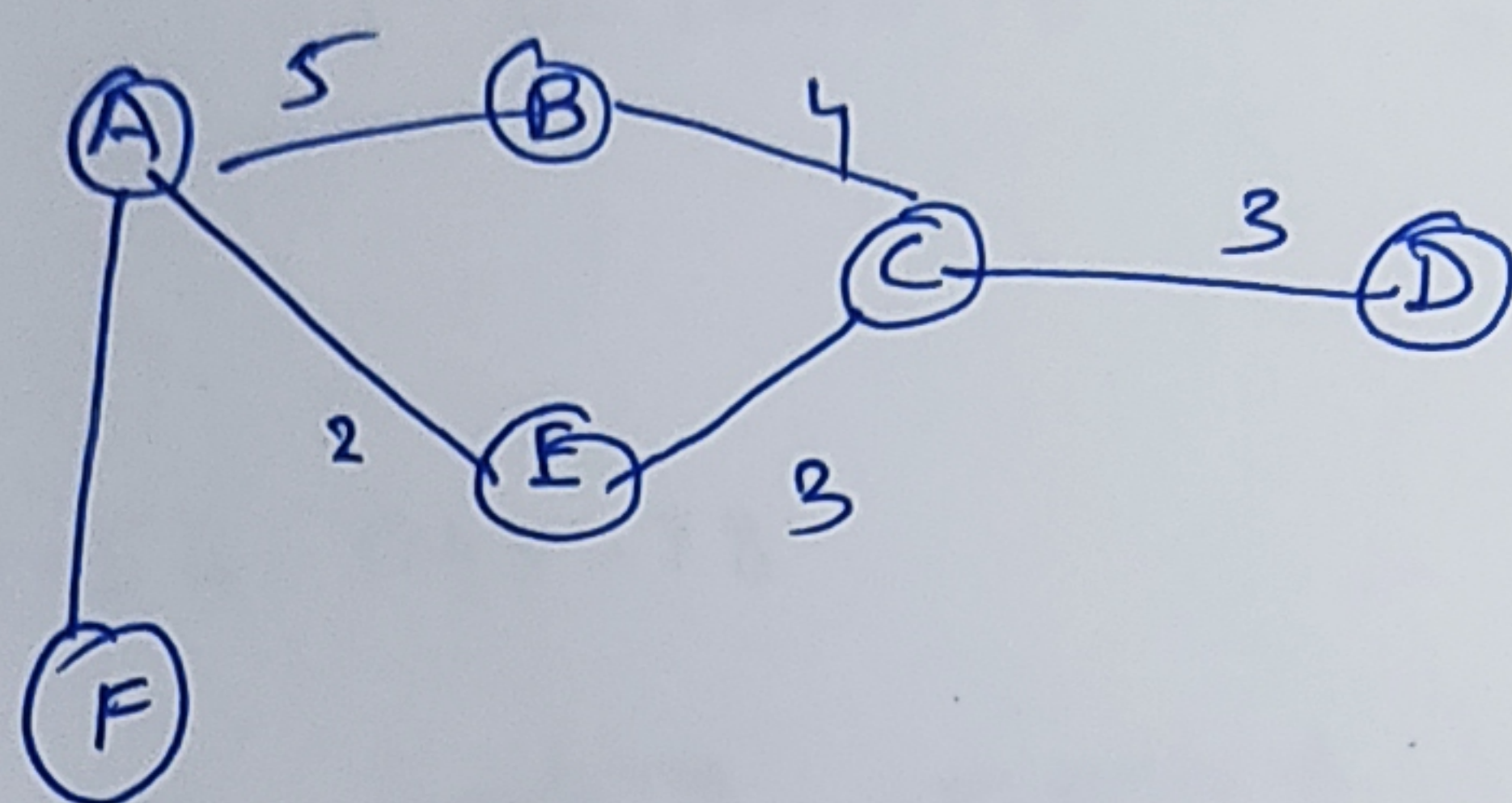
3) (a) $x^3 + x^2 + 1$

1101

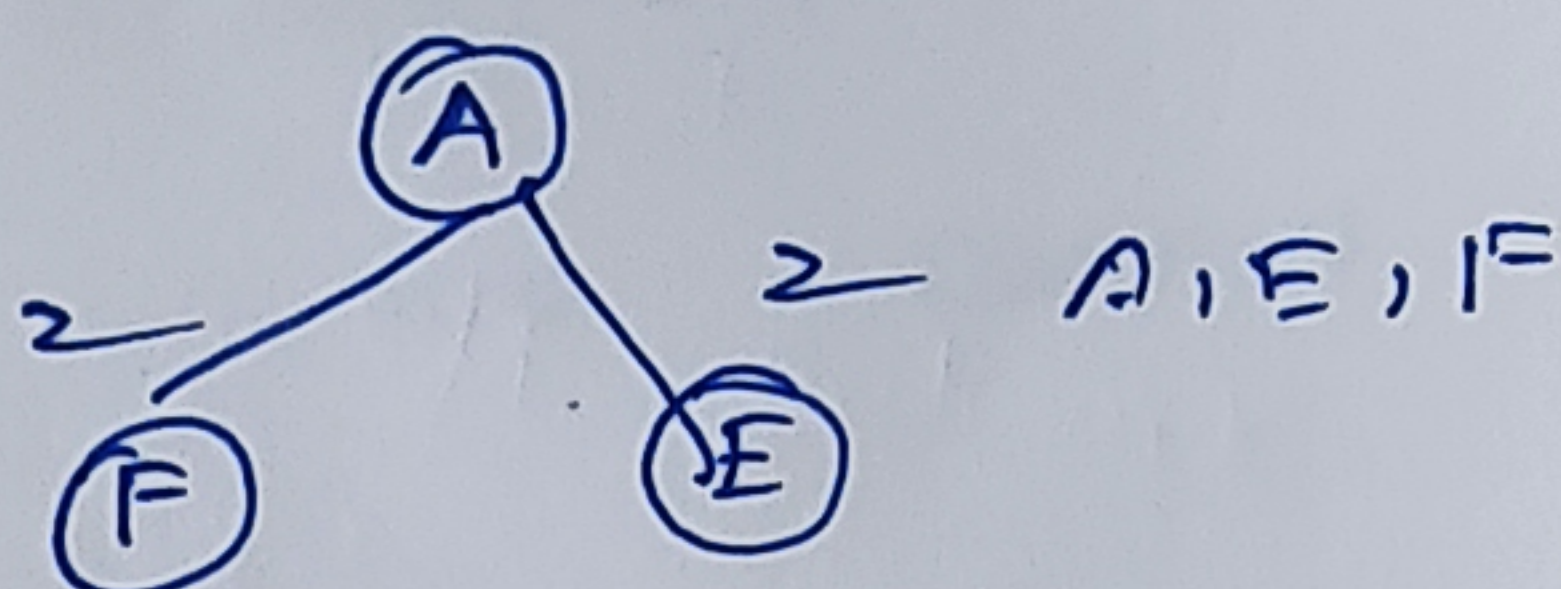
(b) $x^3 + x + 1$

1011

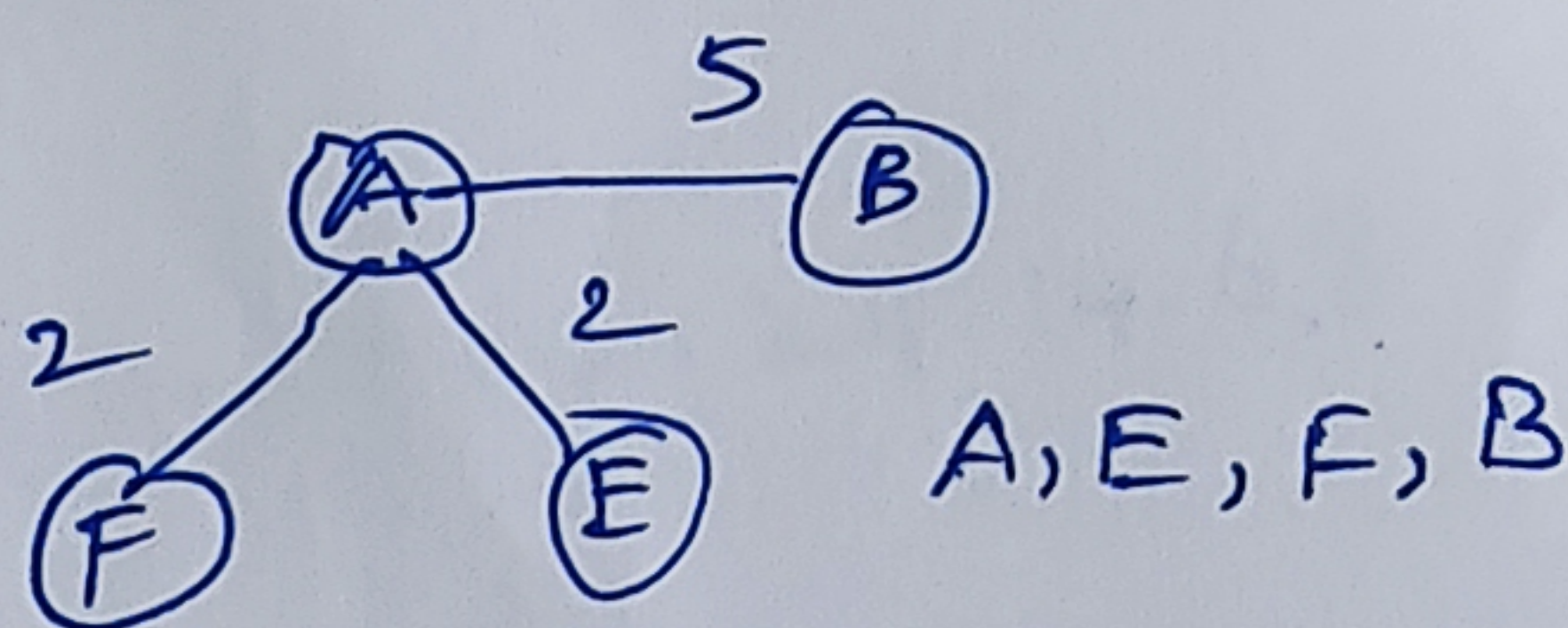
4)



Step 1:



Step 2:



$$\begin{array}{r}
 00011000111(100) \\
 \downarrow 1001 \\
 0111 \\
 \downarrow 1001 \\
 01110 \\
 (001) \\
 \downarrow 11110 \\
 1001 \\
 (011) \\
 (001) \\
 \downarrow 0001 \\
 1001 \\
 \downarrow 001000
 \end{array}$$

$$\begin{array}{r}
 001111000111(100) \\
 \downarrow 1001 \\
 01110 \\
 (001) \\
 01110 \\
 (001) \\
 (111) \\
 (1001) \\
 (1011) \\
 (001) \\
 \downarrow 1001 \\
 1001 \\
 \downarrow 0000
 \end{array}$$