Assignment V

Solution

\[ e(X) = r(X) + c(X) \]

\[ c(X) = X + X^2 + X^3 + X^6 \]

\[ r(X) = X + X^3 + X^6 \]

The error polynomial is therefore

\[ e(X) = X^2 \]

\[ g(X) = 1 + X + X^3 \]

the syndrome polynomial is

\[ s(X) = X^2 \]

( the remainder of dividing \( r(X) \) by \( g(X) \) )

which, for the problem at hand, is the same as the error polynomial. This result demonstrates the property of the syndrome polynomial, stating that it is the same as the error polynomial when the transmission errors are confined to the parity-check bits.