In systematic form.

$$G = \left[\begin{array}{cc|cccccc} 1 & 0 & 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 & 0 & 1 \end{array}\right].$$

2 Errors detected.:-

① Detected error $= d_{min} - 1 = 3-1 = 2.$

② Corrected error $\Rightarrow t = \left\lfloor \frac{d_{min}-1}{2} \right\rfloor = \frac{3-1}{2} = 1$ //.

(c) $N=7.$

$g(D) = (D+1)(D^3+D+1) = D^4+D^2+\cancel{D}+D^3+\cancel{D}+1 .:= D^4+D^3+D^2+1.$

For checking code is cyclic or not.

Use $\frac{D^7+1}{g(D)}$.

$$\begin{array}{r|l} & D^3+D^2+1. \\ \hline D^4+D^3+D^2+1 & D^7+0+0+0+0+0+0+1. \\ & D^7+D^6+D^5+0+D^3 \\ \hline & D^6+D^5+0+D^3+0+0+1. \\ & D^6+D^5+D^4+0+D^2 \\ \hline & D^4+D^3+D^2+0+1. \\ & D^4+D^3+D^2+0+1. \\ \hline & 0 // \end{array}$$

Therefore, the given block code is cyclic as there is no remainder.. and even when we can shift the polynomial of generator matrix,