

①

$$\begin{aligned} c_1 &= 00000 \\ c_2 &= 10011 \\ c_3 &= 11100 \\ c_4 &= 00111 \end{aligned}$$

$$\begin{aligned} a) \quad d_{H_{\min}} &= 2 \quad \Rightarrow \quad \boxed{e_d = 1} = d_{H_{\min}} - 1 \\ & \quad \boxed{e_c = 0} = \left\lfloor \frac{d_{H_{\min}} - 1}{2} \right\rfloor \\ d_H(c_1, c_2) &= 3 \\ -// - c_1 c_3 &= 3 \\ -// - c_1 c_4 &= 3 \end{aligned}$$

b). $R_1 = 11100 = C_3 \checkmark$
no errors

$$\begin{array}{l} C_2 C_3 = 4 \\ C_2 C_4 = 2 \\ C_3 C_4 = 4 \end{array}$$

$R_2 = 00011$ ~~not in list~~ \Rightarrow errors

$$\begin{aligned} d \# (n_1, c_1) &= 2 \\ \text{---} // \text{---} c_2 &= 1 \\ \text{---} // \text{---} c_3 &= 5 \\ \text{---} // \text{---} c_4 &= 1 \end{aligned}$$

pick minimum
 C_2 or C_4
 se alege unul dintre ele (indiferent)

c) s_e transmits $c_z = 10011$

cu erori pe pozit,ile 1 si 3 \Rightarrow se recept. = 00111
= c_4

erori mediate

2

$$e_0 = 3 \Rightarrow d_{H_{\min}} = 4$$

$C_1 = 0000000$
 $C_2 = 0001111$
 $C_3 = 1110100$
 $C_4 = 1111011$

3

$$p_c = 2 \Rightarrow d_{H_{\min}} = 5$$

$C_1 = 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0$
 $C_2 = 0 \ 0 \ 0 \ 0 \ 0 \ 1 \ 1 \ 1 \ 1 \ 1 \ 1 \ 1$
 $C_3 = 1 \ 1 \ 1 \ 1 \ 1 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0 \ 0$
 $C_4 = 1 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0 \ 1 \ 0$