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EX.3 2018-07-04

3)

c) Minimal bandwidth

3.3

$$R_c = \frac{R_{lit}}{R} = \frac{10 \text{ Mbit/s}}{1/3} = 30 \text{ Mbit/s}$$

$$B_T = \frac{R_c}{2} (1 + \underbrace{\delta}_{=0}) = \frac{R_c}{2} = \boxed{15 \text{ MHz}}$$

2) BCH code  $N=31$

generator

107657

001, 000, 111, 110, 101, 112  $\rightarrow g(D) = D^{15} + D^{11} + D^{10} + D^9 + D^8 + D^7 + D^5 + D^3 + D^2 + D + 1$

$$g(D) = \underline{D^{15} + D^{11} + D^{10} + D^9 + D^8 + D^7 + D^5 + D^3 + D^2 + D + 1}$$

$$N - n = 15 \rightarrow k = N - 15 = \boxed{16}$$

$$\# \text{ codewords} = 2^k = 2^{16} = \boxed{65536}$$

2 words  $\rightarrow$  00...00 (0 of 1)

15 words  $\rightarrow$  7 1's

46 words  $\rightarrow$  8 1's

5208 words  $\rightarrow$  11 1's

$$\boxed{d_{min} = 7}$$