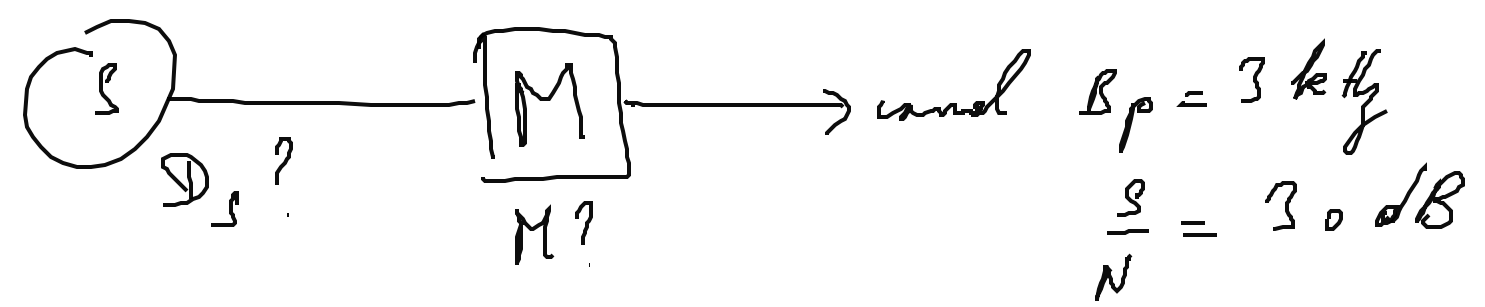


1.14



Shannon \rightarrow

$$C = B_p \log_2 \left(1 + \frac{S}{N} \right)$$
$$= 3000 \log_2 (1 + 10^3)$$
$$= \frac{3000}{0,3} \cdot 3 = 30000 \text{ bits/s}$$

$$D_c = 2 B_p$$
$$= 2 \cdot 30000 = 60000 \text{ bands}$$
$$= \frac{D_s}{\log_2 M} = \frac{30000}{\log_2 M}$$

$$\log_2 M = \frac{30000}{60000} = 5 \text{ bits/symbol} \rightarrow M = 2^5 = 32 \text{ symbols}$$