Ans to QNo - 1

a) Each character needs 1 byte.

∴ 5 characters need 5 bytes,

So, In 1 slot there are $(5 \times 8) = 40$ bits.

∴ u 7 slots there are (40×7) bits

$= 280$ bits.

(Ans)

b) Output frame rate = Input rate.

$= (75 \div 5) \times 10^6 = 15000000$ frames/second.

c) Output data rate = frame rate × frame size

$= (15000000 \times 280)$ bits /s

$= 525$ MB/s

d) Input bit duration $= \dfrac{1}{\text{input rate}}$

$= \dfrac{1}{15\,000\,000}$ seconds

$= 66.6667$ nanoseconds.

(Ans)

e) Output bit duration $= \dfrac{\text{Input bit duration}}{\text{number of connections}}$

$= \dfrac{66.6667}{7}$ nanoseconds

$= 9.524$ nanoseconds.

[Approx]

f) Output slot duration $= 9.524$ nanoseconds.

[Approx]

Ans to Q No - 2

i) After encoding using 4B/5B, 10010 1111111010

becomes → 11110 11100 01110 10101 ,

Using MLT-3 scheme:
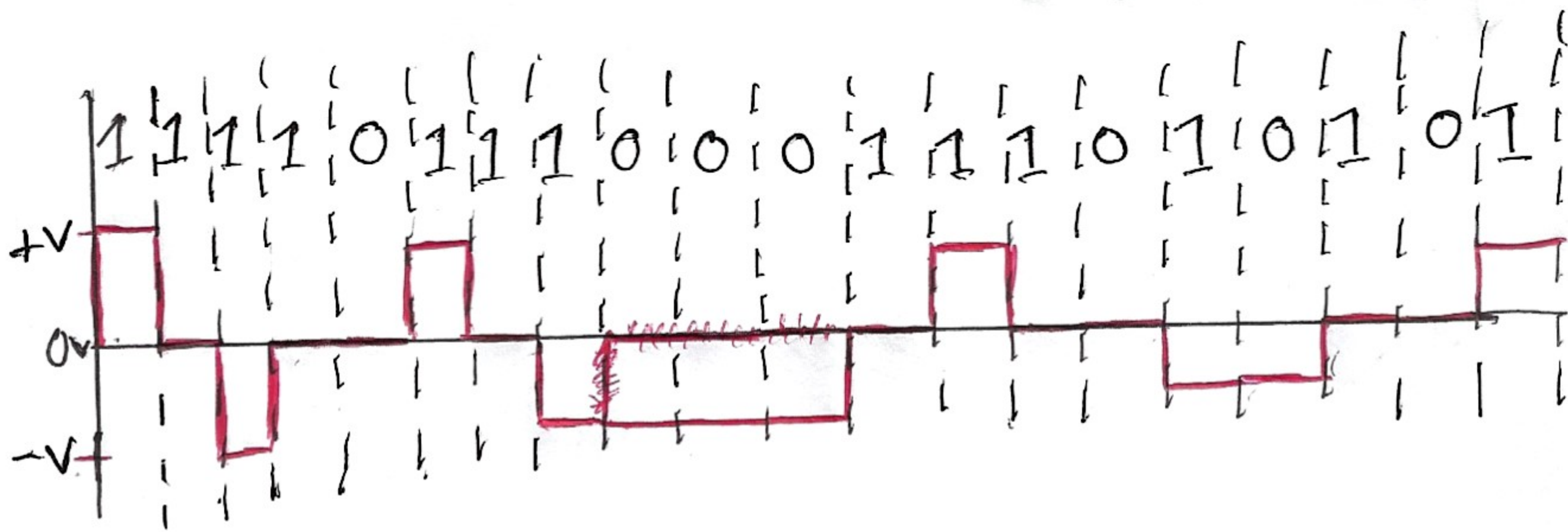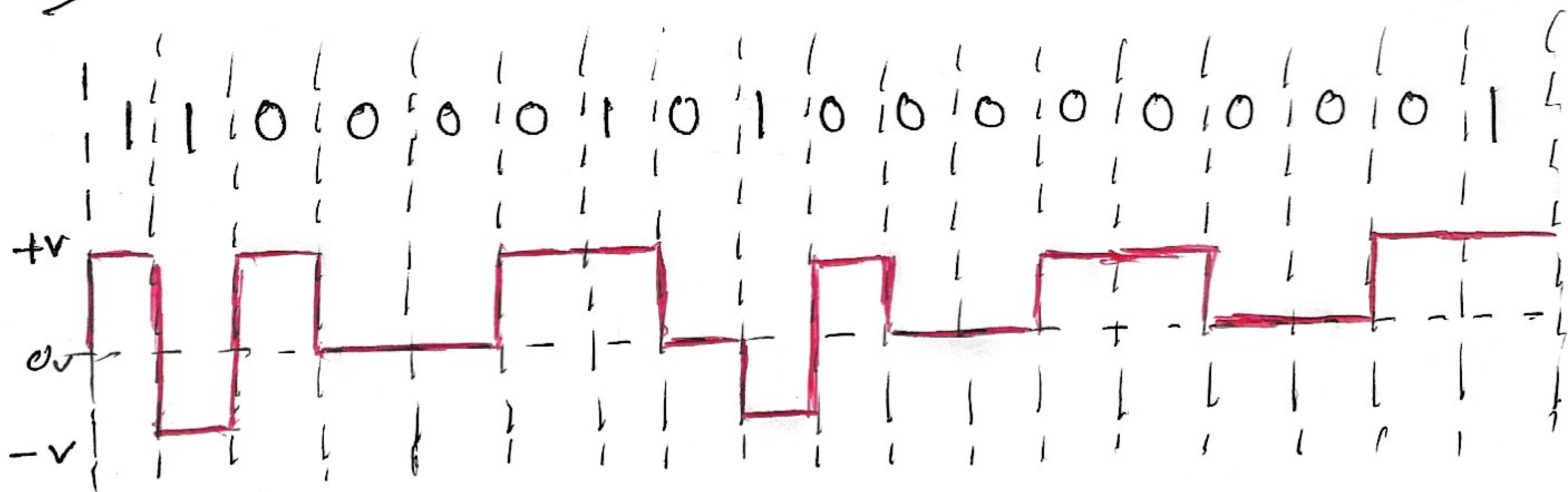
ii) Given, Using HDB3

a) Unshielded twisted-pair cables.

b) Twisted pair cables.

c) Optical Fiber