x, 2PSK		N	N.
x, 4QAM	2	N	2N.
x, 8QAM	3	N	3N.

compute the bit rate for a 1000 baud 16-QAM signal.

Ans:- • A QAM signal has 4-bits/baud, Thus.

$$\text{bit rate} = 1000 \times 4 = 4000 \, b/ps.$$

Q:- A Constellation diagram Consists 7 eight equally spaced points on a circle. If the bit rate is 4800 bps. what is the baud rate.

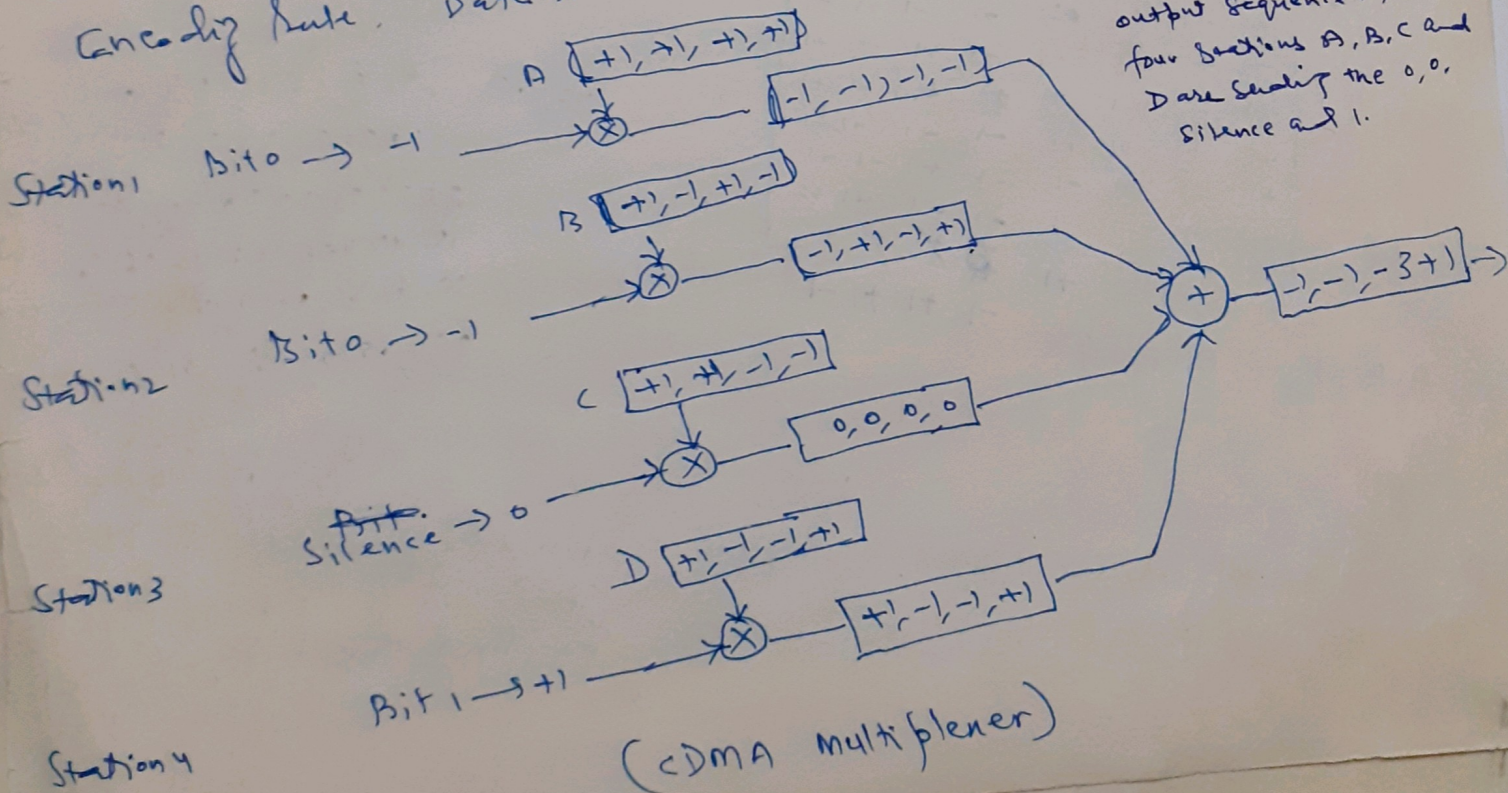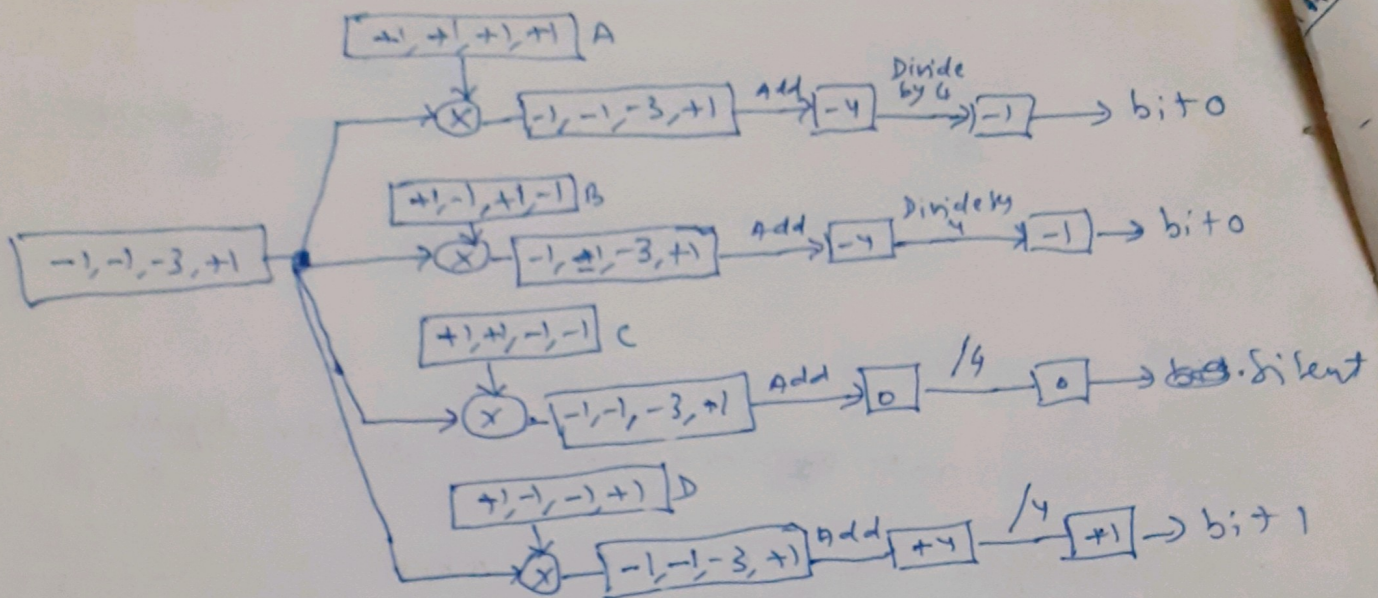Ans:- $\frac{4800}{3} = 1600 \, baud$

FDM, TDM, WDM :-

CDMA :- Code division Multiple Access :-

Encoding Rule. Date bit 0 → -1, Date bit 1 → 1, Silence → 0

Q:- Find the Multiplexer output sequence if four Stations A, B, C and D are sending the 0,0, silence and 1.

Station 1 Bit 0 → -1
A [+1, +1, +1, +1] ⊗ → [-1, -1, -1, -1]

Station 2 Bit 0 → -1
B [+1, -1, +1, -1] ⊗ → [-1, +1, -1, +1]

Station 3 Bit. Silence → 0
C [+1, +1, -1, -1] ⊗ → [0, 0, 0, 0]

Station 4 Bit 1 → +1
D [+1, -1, -1, +1] ⊗ → [+1, -1, -1, +1]

+ → [-1, -1, -3, +1] →

(CDMA multiplexer)

(CDMA Demultiplexer)

- chip sequence is orthogonal seq. and generated by using walsh table.
- Walsh table, a two dimensional table with an equal no. of rows and columns.
- The walsh table w_1 is for one chip seq. is one row and one column.

e.g $w_1 = \begin{bmatrix} +1 \end{bmatrix}$ $W_{2N} = \begin{bmatrix} WN & WN \\ WN & \overline{WN} \end{bmatrix}$

$w_2 = \begin{bmatrix} +1 & +1 \\ +1 & -1 \end{bmatrix}$, $w_4 = \begin{bmatrix} +1 & +1 & +1 & +1 \\ +1 & -1 & +1 & -1 \\ +1 & +1 & -1 & -1 \\ +1 & -1 & -1 & +1 \end{bmatrix}$

$w_8 = \begin{bmatrix} +1 & +1 & +1 & +1 & +1 & +1 & +1 & +1 \\ +1 & -1 & +1 & -1 & +1 & -1 & +1 & -1 \\ +1 & +1 & -1 & -1 & +1 & +1 & -1 & -1 \\ +1 & -1 & -1 & +1 & +1 & -1 & -1 & +1 \\ +1 & -1 & -1 & +1 & -1 & -1 & -1 & -1 \\ +1 & +1 & +1 & +1 & -1 & +1 & -1 & +1 \\ +1 & -1 & +1 & -1 & -1 & +1 & +1 & +1 \\ +1 & +1 & -1 & -1 & -1 & +1 & +1 & -1 \\ +1 & -1 & -1 & +1 & +1 & -1 \end{bmatrix}$

$A \cdot B = 0$, $A \cdot A = 4$

·12/3/·5 2, 4, 6, 7, 8, 13, 14, 15, 16
17, 18, 20, 21, 23, 24, 26,
28, 29, 31, 32, 38, 40, 34, 43
42, 46, 49, 51, 53, 56, 58, 5,
59, 61, 63, 64, 11, 45, 32,
27, 19, 03, 62, 01, 66,

Find out the CDMA Multiplexer output sequence, if
six stations A, B, C, D, E and F are sending the bits