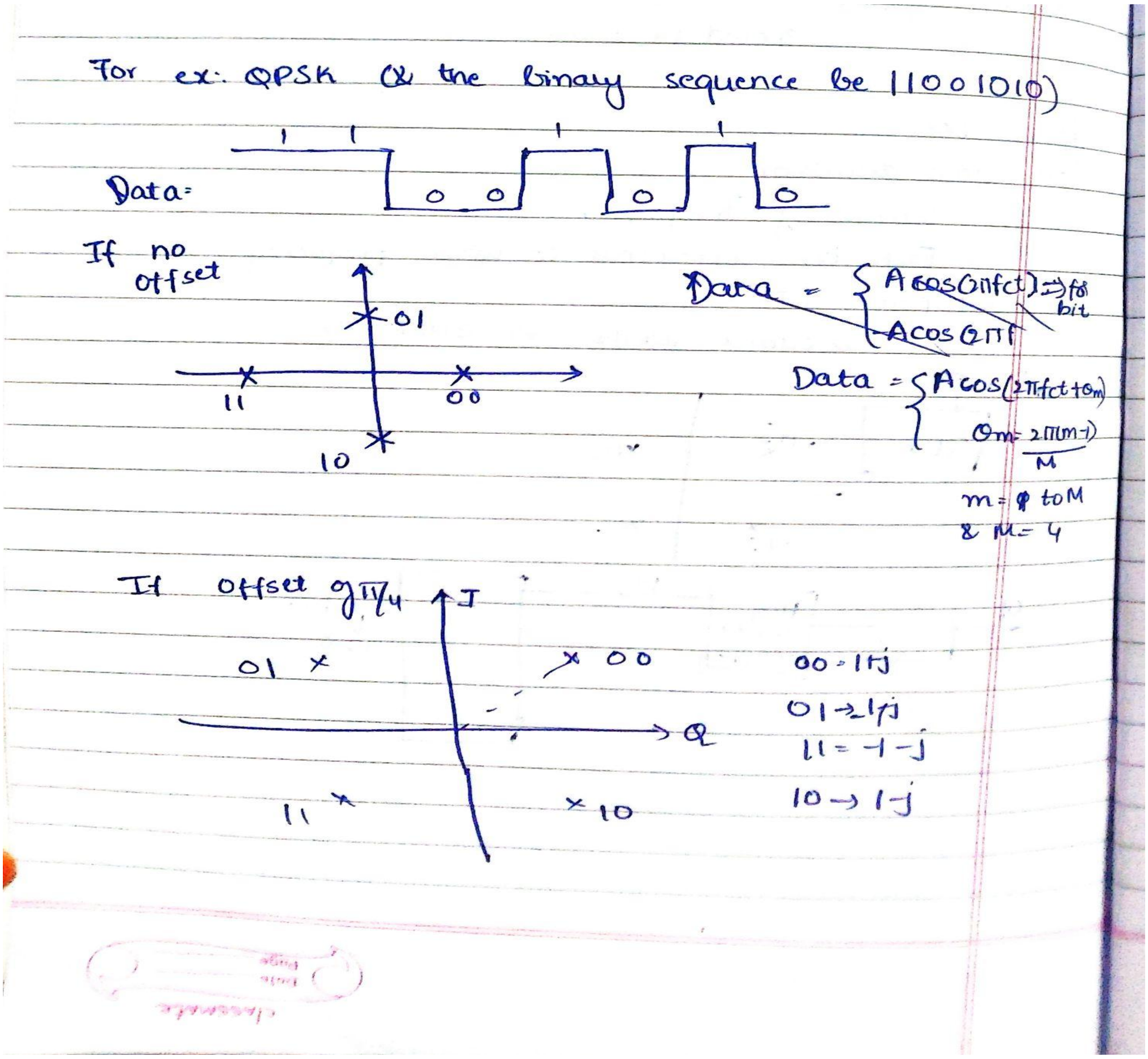
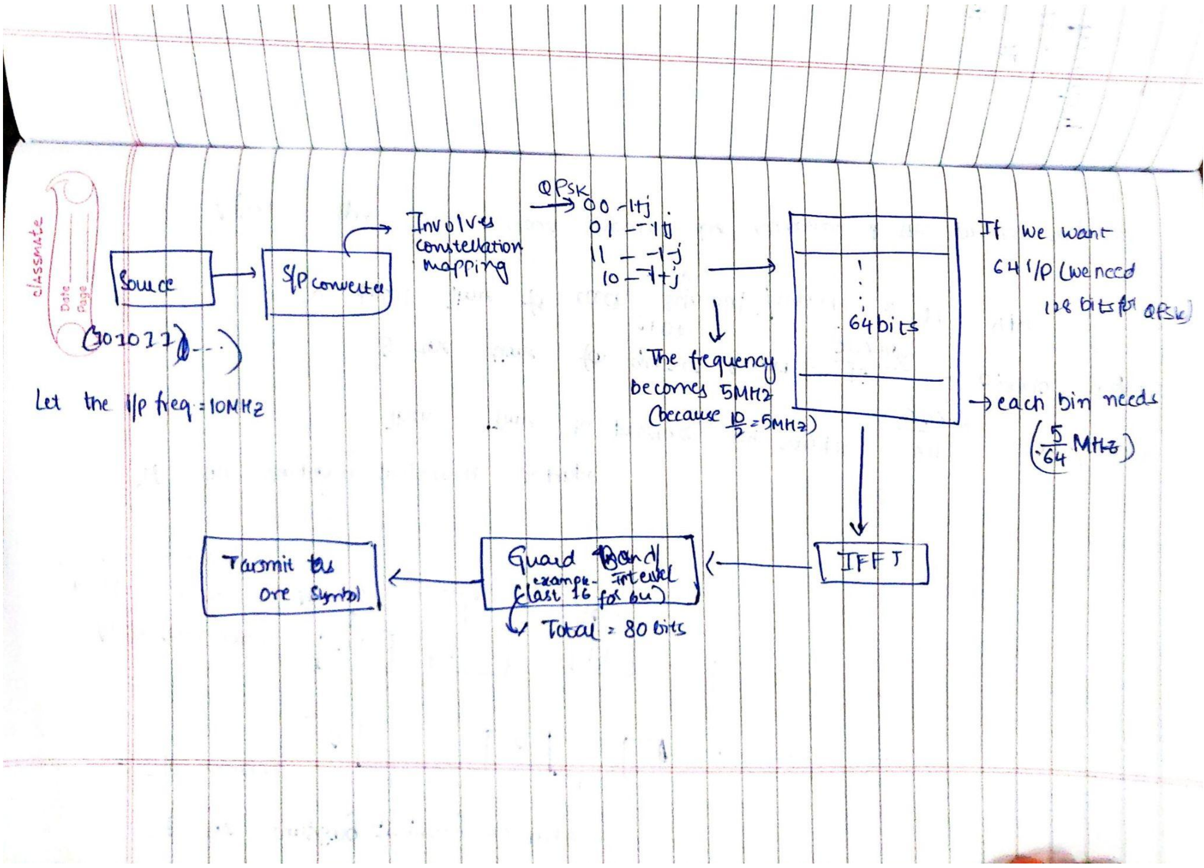
- **Steps Involved:**
    1. Source Generation:
       For the data to be transmitted, we send the data by generating random binary numbers like 10100101001110…..
    2. Conversion of the data from serial to parallel and mapping to the frequency bins:
       Since the data received from the input end will be in serial mode we should convert it so that we can map the data in a way where we give the respective inphase and quadrature values to the binary numbers. For example: In QPSK, mapping the respective 00,01,11,10 bits to a frequency domain value with the help of a constellation diagram



3. The output from step 2 should be mapped to a 64 length(if the length is 64 point) frequency bin and take a note of the sampling frequency with which you are performing so that we can check if the obtained signal is correct or not.
4. For every symbol time, after 64 input frequency samples of the symbols are received, the part 3 should be repeated by taking different inputs to get the OFDM signal.
5. Convert these values to time-domain with the help of IFFT.
6. Then we have to perform a cyclic prefix i.e by appending the last few IFFT symbols to the original IFFT to avoid intersymbol interference.
7. Lastly, transmitting this as a single symbol and analyzing the OFDM signal waveform.



If the sampling frequency = 20 Mbps

⇒ I/p sequence :

After constellation mapping & sending to frequency bits

$\boxed{01}$ $\downarrow$ $1-j$

$\boxed{10}$ $\downarrow$ $-1+j$

$\boxed{11}$ $-1-j$

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If the sampling frequency = 20 Mbps

Then Time to produce 64 samples $= \frac{64}{20 \times 10^6} = 3.2 \times 10^{-6} = 3.2\,\mu s$

& the time for guard band $= \frac{16}{20 \times 10^6} = 0.8 \times 10^{-6} = 0.8\,\mu s$

So total Time for each OFDM symbol / signal $= 3.2 + 0.8 = 4\,\mu s$

After $4\,\mu s$ new data should be received & the process repeats