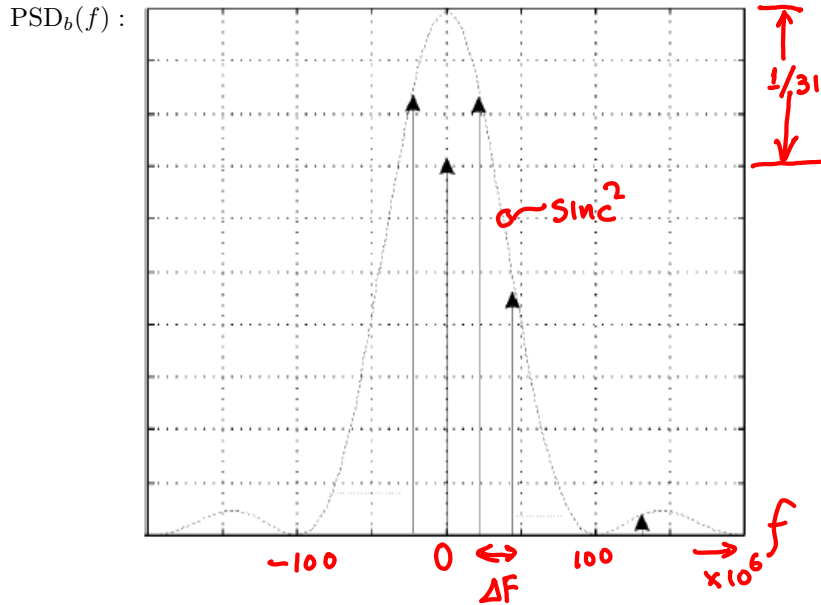


## 7 Topic: SSS and PN-Codes

32. A pseudo random (PN) signal  $b(t)$  is generated by using a maximal length shift register of  $m$ -stages and has the following double-sided Power Spectral Density.



- (a) Find the number  $m$  of shift register stages. 5%
- (b) Find  $\Delta F$ . 5%
33. Sketch the feedback shift register whose feedback connections are represented by the primitive polynomial  $x^{24} + x^7 + x^2 + x + 1$  and find the length  $N$  of this sequence. [6 marks]  
 If the clock rate is 2.7 chips/s, find the period of this sequence in minutes. [4 marks]
34. Sketch the feedback shift register whose feedback connections are represented by the primitive polynomial  $D^{24} + D^7 + D^2 + D + 1$  and operates with a clock rate 1Mb/sec. 5%  
 Find the period of the output sequence in minutes.
35. Consider a feedback shift register whose feedback connections are represented by the primitive polynomial  $D^4 + D^1 + 1$ . Give one period of its output sequence - starting with all 1's (initial condition). 15%