ITS323 – Quiz 2

Question 1 [3 marks]

a) Draw a plot of the following signal in the frequency domain. [2 marks]

 $s(t) = 6\sin(1200\,\pi\,t) + 2\sin(3600\,\pi\,t) + \frac{6}{5}\sin(6000\,\pi\,t)$

b) What is the absolute bandwidth of the signal? [1 mark]

Question 2 [1 mark]

The wireless link from SIIT Bangkadi to SIIT Rangsit is an example of (multiple choice):(a) Terrestrial Microwave(b) Satellite Microwave(c) Broadcast Radio

Question 3 [4 marks]

A receiver receives a 500kHz signal with power 30 μ W.

a) If the channel also contains noise of 2 μW , what is the theoretical data rate possible? [2 marks]

- b) Assuming the noise cannot be controlled, explain how the data rate can be increased, without increasing the bandwidth. [1 mark]
- c) What is a disadvantage of increasing the data rate with the approach you suggest in part (b)? [1 mark]

Question 4 [2 marks]

The path between SIIT Bangkadi and SIIT Rangsit is measured to have a power loss of 95dB. Both transmit and receive antenna's are identical, with a gain of 10dBi. If the receiver has a receive power threshold of -60dBW, what is the minimum transmit power for successful reception?