# ITS323 – Quiz 2

Name: _____ ID: _____ Marks: _____ (10)

## Question 1 [3 marks]

Consider a signal received with power of 12.6mW in a channel with measured noise of 200uW. What is the required channel bandwidth to support a data rate of 120Mb/s? Show your calculations.

## Question 2 [3 marks]

Select the most appropriate word/phrase from those listed below to fill in the blanks in the statements about data transmission.

bandwidth; data rate; cost; errors; bits; analog data; analog signals; analog transmission; digital data; digital signals; digital transmission

(a) Increasing the number of signal levels results in increased data rate and _____.

(b) Text is an example of _____.

(c) In _____, amplifiers are used to cover a long distance with multiple links.

# Question 3 [4 marks]

Consider the general signal equation $s(t)$:

$$s(t) = \frac{A}{1}sin(2\pi 1ft) + \frac{A}{3}sin(2\pi 3ft) + \frac{A}{5}sin(2\pi 5ft) + \cdots + \frac{A}{N}sin(2\pi Nft)$$

where $N$ is an odd number.

If a signal with 5 components and bandwidth of 24MHz is used, then what is the period of $s(t)$? Show your calculations.