

MIDTERM EXAM 1
10:30 PM – 11:20 PM
February 28, 2020

This exam has two (2) questions on two (2) pages. The marks for each question are as indicated. There are a total of ten (10) marks. Answer all questions. Write your answers and all rough work in this paper and nowhere else. Show your work. Draw a box around your final answer. Numerical answers must include units. Books and notes are allowed. No electronic devices other than calculators are allowed. Show your work.

This exam paper is for:

Exam 1 A00123456

Each exam is equally difficult.

Answer your own exam.

Do not start until you are told to do so.

Name: _____

BCIT ID: _____

Signature: _____

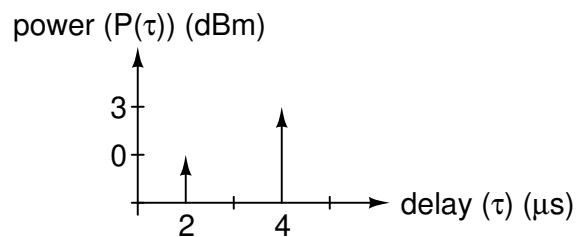
Question	Mark	Max.
1		5
2		5
Total		10

Question 1**5 marks**

A point-to-point communication link operates over a distance of 100 m at a frequency of 900 MHz. The transmit and receive antennas each have an effective aperture of $A_e = 10^{-2} \text{ m}^2$. If the transmit power is 10 mW, what is the received power in dBm? Assume free-space propagation.

Question 2**5 marks**

A receiver measures the impulse response of a multipath channel and obtains the following result:



- (a) What is the mean excess delay?
- (b) What is the RMS delay spread?

Hints: The powers are given in dBm, not linear units. Check your units; the results should be in seconds.

MIDTERM EXAM 1
10:30 PM – 11:20 PM
February 28, 2020

This exam has two (2) questions on two (2) pages. The marks for each question are as indicated. There are a total of ten (10) marks. Answer all questions. Write your answers and all rough work in this paper and nowhere else. Show your work. Draw a box around your final answer. Numerical answers must include units. Books and notes are allowed. No electronic devices other than calculators are allowed. Show your work.

This exam paper is for:
Exam 2 A00123456

Each exam is equally difficult.
Answer your own exam.
Do not start until you are told to do so.

Name: _____
BCIT ID: _____
Signature: _____

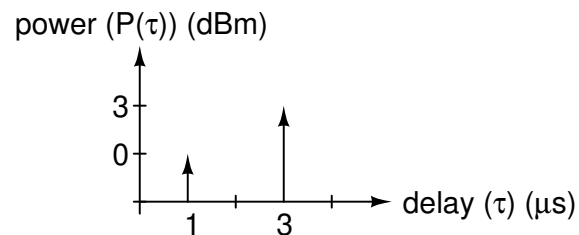
Question	Mark	Max.
1		5
2		5
Total		10

Question 1**5 marks**

A point-to-point communication link operates over a distance of 1 km at a frequency of 900 MHz. The transmit and receive antennas each have an effective aperture of $A_e = 10^{-2} \text{ m}^2$. If the transmit power is 100 mW, what is the received power in dBm? Assume free-space propagation.

Question 2**5 marks**

A receiver measures the impulse response of a multipath channel and obtains the following result:



- (a) What is the mean excess delay?
- (b) What is the RMS delay spread?

Hints: The powers are given in dBm, not linear units. Check your units; the results should be in seconds.