

# EERI423 Exam breakdown 2013-2016

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## 1 2016

- Question 1
  - Elements of a communication system
  - Block diagram of a phase locked loop synth
- Question 2
  - Square law mixer
  - Receiver noise calcs
  - Image frequency
  - Block diagram modern direct conversion Receiver
- Question 3
  - Duplexing
  - Shannon-hartley eqn
  - Fading margin
  - LTE
- Question 4
  - Power budget
- Question 5
  - Cellular systems

## 2 2015

- Question 1
  - Baseband vs broadband multiplexing
  - Quantizing noise
- Question 2
  - Block diagram of a modern digital transmitter
  - Block diagram of a direct digital synthesizer
  - Receiver noise calcs
  - theory
  - SDR
  - Mixer in a digital synth
  - Automatic gain control
- Question 5
  - Cellular systems

## 3 2014

- Question 1
  - Form factor of a band pass filter
  - Insertion Loss
  - Multiplexing
  - Adding up gains
- Question 2
  - Block diagram of a typical FM transmitter
  - Variable modulus transmitter
  - Block diagram of a double heterodyne transmitter
  - Receiver noise calcs

- Question 3
  - theory
  - RZ encoding
  - Multiplexing, (“normal binary channel?!”)
  - GMSK
  - FDD vs TDD
  - OFDM
  - Shannon-hartley eqn
- Question 4
  - Path loss
- Question 5
  - Cellular systems

## 4 2013

- Question 1
  - 4 elements of any communication channel
  - Compander w.r.t speech signals
  - Compander calc
- Question 2
  - Block diagram of a modern digital transmitter
  - Problem with fixed prescalers in synths
  - Receiver noise calcs
- Question 3
  - 2 types of spread spectrum
  - 3 advantages of spread spectrum
  - Block diagram of a carrier recovery circuit for BPSK modulation

Shannon-hartley eqn

- Question 4
  - Path loss
- Question 5
  - Cellular systems

## 5 2012

- Question 1
  - Compander w.r.t speech signals
  - Compander calc
- Question 2
  - Block diagram of a modern digital transmitter
  - Problem with fixed prescalers in synths
  - Receiver noise calcs
- Question 3
  - 2 types of spread spectrum
  - 3 advantages of spread spectrum
  - Block diagram of a carrier recovery circuit for BPSK modulation
  - Shannon-hartley eqn
- Question 4
  - Path loss
- Question 5
  - Cellular systems