Unit 2 - Week 1

Assignment -1

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

1) Which hardware component is not present in Superheterodyne transmitter?

- Digital to Analog Converters
- Analog to Digital Converters
- Local Oscillators
- Low-Noise Amplifier

No, the answer is incorrect.
Score: 0
Accepted Answers:
Low-Noise Amplifier

2) If measure SNR is around 74 dB in an ADC. What is bit-resolution of ADC?

- 16-bit
- 10-bit
- 12-bit
- 8-bit

No, the answer is incorrect.
Score: 0
Accepted Answers:
12-bit

3) Increase in IF frequency in Superheterodyne transceivers is related to

- Increase in clock jitter.
- Capability of filtering the image signal.
- Increase in constraint on DAC and ADC.
- All of the above.

Due on 2019-02-13, 23:59 IST.
5) In an analog quadrature modulator, frequency of input data is 30 MHz and LO frequency is 1.8 GHz. What would be frequency of signal at modulator output due to DC error?

- 1.8 GHz
- 1.86 GHz
- 1.83 GHz
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers: 1.77 GHz

6) In an analog quadrature modulator, frequency of input data is 30 MHz and LO frequency is 1.8 GHz. What would be frequency of output RF?

- 1.8 GHz
- 1.86 GHz
- 1.83 GHz
- None of the above

No, the answer is incorrect.
Score: 0
Accepted Answers: 1.8 GHz

7) What is the major advantage of Homodyne transceivers?

- Error signal due to I/Q imbalance interferes with the signal of interest.
- DC offset errors interfere with the signal of interest
- Easy to integrate on-chip
- Large size as compared to other architectures.

No, the answer is incorrect.
Score: 0
Accepted Answers: Easy to integrate on-chip

8) If the IF frequency in a transmitter is equal to 0 then the architecture of the transmitter is called

- Superheterodyne / Digital-IF
- Homodyne / Direct Conversion
- Superheterodyne / Direct Conversion
- Homodyne / Digital-IF

No, the answer is incorrect.
Score: 0
Accepted Answers:
9) DC offset distortion cannot be removed by filtering in Superheterodyne transceivers. 
   - Digital-IF based Homodyne architecture
   - Homodyne transceivers
   - Dual-conversion superheterodyne architecture

No, the answer is incorrect.
Score: 0
Accepted Answers:
Homodyne / Direct Conversion

10) Superheterodyne transceiver is robust to following distortion component as compared to the homodyne transmitter?
   - I/Q imbalance
   - LO leakage
   - DC Offset
   - All of the above

No, the answer is incorrect.
Score: 0
Accepted Answers:
Homodyne transceivers

11) If two frequencies \( f_1 > f_2 \) need to be transmitted using two different antennas of length \( L_1 \) and \( L_2 \), then
   - \( L_1 = L_2 \)
   - \( L_1 < L_2 \)
   - \( L_1 > L_2 \)
   - None of above

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( L_1 < L_2 \)