Exam ID: 010

Name and Surname _____

Student ID _____

# Physical layer models and techniques for software radio

## *Wed, 3-July-2019*

*Tick the correct answer:*

1. **Nagakami model**
   - is used to model multipath wireless channel phase effects
   - Is a special case of Rayleigh channel model
   - Provides a probabilistic model of received signal power attenuation
   - Don't know
2. **In the rain model of a channel**
   - Attenuation is a random variable
   - Attenuation is described by a lowpass equivalent time variant pulse response
   - Attenuation is a complex variable
   - Don't know
3. **Diversity concept can be directly associated with**
   - Transmitting multiple bits from a multimedia source
   - Transmitting the same information on multiple subchannels of a bandpass signals
   - Transmitting multi user signals in a bandpass channel
   - Don't know
4. **Rayleigh model**
   - Provides a probabilistic model of delay spread
   - Provides a deterministic model of channel attenuation
   - Describes a first order characteristic of a radio channel
   - Don't know
5. **Free space model takes into account**
   - Doppler spread, delay spread coherence bandwidth
   - Carrier frequency, antenna gain, distance between transmitter and receiver
   - Carrier frequency, multipath lambda effect, , transmitter power
   - Don't know
6. **A fine synchronization method in DS CDMA**
   - Uses header information at the beginning of transmission
   - Estimates frequency offset due to time variance at the receiver
   - Allows to optimize matched filter behavior
   - Don't know
7. **In OFDM modulated signal**
   - The bandwidth does not depend of spacing among multiple carriers
   - The bandwidth depends on the number of carriers.
   - The bandwidth depends on the pseudonoise code length
   - Don't know
8. **Orthogonality in OFDM**
   - Is among modulated signal carriers
   - Is among user codes

- is only between the in phase and the quadrature component of the multicarrier signal
- Don't know

**9. A Viterbi receiver for multiuser CDMA**

- Has a lower computational complexity that MMSE receiver
- Does not use all multiuser codes at the receiver stage
- Is optimal for eliminating MUI in DS CDMA transmissions
- Don't know

**10. CDMA and OFDM bandpass waveforms**

- Have regular non random shapes
- Are similar to noise
- Have modulation variant and user invariant shapes
- Don't know