Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – Nov/Dec – 2016**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **14EC3013** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WIRELESS COMMUNICATION NETWORKS** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Compare small scale fading and large scale fading. | CO1 | 6 |
| b. | Analyze in detail about the theory behind Link power budget calculation. | CO3 | 5 |
| c. | Discriminate coherence time and coherence bandwidth. | CO1 | 3 |
| d. | Enumerate the Shadowing Distribution. Explain the maximum outage capacity of truncated channel inversion. | CO3 | 6 |
| (OR) | | | | |
| 2. | a. | Enumerate the modes in Longley Rice model. | CO3 | 9 |
| b. | If spectrum of a channel is between 3MHz and 4MHz; and Shannon Channel capacity is 8Mbps. Find the number of signaling levels M required in modulation. | CO2 | 4 |
| c. | Write about the properties of Nakagamai distribution. | CO3 | 7 |
| 3. | a. | Write a short note on Receiver diversity Techniques: Selection Combining and Threshold Combining. | CO3 | 12 |
| b. | What are the different ways of achieving independent fading paths in a wireless system? | CO1 | 8 |
| (OR) | | | | |
| 4. | a. | Explain about the Transmitter Diversity  i) Channel known at Transmitter  ii) Channel unknown at transmitter. | CO3 | 12 |
| b. | Explain about the advantages of selection diversity technique. | CO3 | 8 |
| 5. | a. | Demonstrate the multiplexing gain of MIMO channel using  i)Parallel decomposition.  ii) Narrowband mode. | CO1 | 12 |
| b. | Review the singular value decomposition technique for a given matrix H= | CO2 | 8 |
| (OR) | | | | |
| 6. | a. | Analyze the Maximum likelihood detection of Space time coding schemes. | CO3 | 10 |
| b. | Compare the features of STTC and STBC. | CO3 | 5 |
| c. | Discuss the trade-off between diversity and multiplexing in aMIMO communication system. | CO1 | 5 |
| 7. | a. | Derive the channel capacity of Downlink and uplink channel. | CO3 | 12 |
| b. | Outline the characteristics of multiple access technique. | CO1 | 8 |
| (OR) | | | | |
| 8. |  | Explain the different types of ALOHA with diagrams. | CO3 | 20 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Demonstrate the IMS architecture and its features. Interpret the three basic topologies supported by IEEE802.11 for WLAN. | CO3 | 12 |
| b. | Distinguish 3G systems from 4G systems. | CO1 | 4 |
| c. | Generalize 4G Key challenges and their proposed solutions. | CO3 | 4 |

ALL THE BEST