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

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**End Semester Examination – Nov/Dec – 2018**

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| **Code :** | **17EC3005** | **Duration :** | **3hrs** |
| **Sub. Name :** | **WIRELESS COMMUNICATION NETWORKS** | **Max. marks :** | **100** |

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

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. |  | Elaborate three basic propagation mechanisms which impact radio propagation in a mobile communication system. | CO2 | 20 |
| (OR) | | | | |
| 2. | a. | Build the log-normal shadowing distribution for fading signals in the wireless channels. Explain why gaussian distribution is used to model attenuation due to blocking objects. | CO2 | 10 |
| b. | Find the outage probability at 15 m for a channel based on combined path loss and shadowing models [KdB=-31dB & ɤ=3.71]. Assume the transmit power of Pt =10mW and minimum power requirement of Pmin=-110.5dBm | CO3 | 5 |
| c. | Under the free-space path-loss model, what is the transmit power required to obtain a received power of 1dBmf or a wireless system with isotropic antennas (gainis1) and a carrier frequency of 5GHz, assuming a distance of 20m. | CO2 | 5 |
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| 3. | a. | Describe the techniques Selection combining and Maximal ratio Combining in diversity. | CO4 | 10 |
| b. | Differentiate the significance of array gain and diversity gain in the system model of linear combiner. | CO4 | 10 |
| (OR) | | | | |
| 4. | a. | Based on multipath dealy spread, explain the characteristics of flat fading channel and frequency selective fading channel in mobile communication. | CO3 | 15 |
| b. | Discuss on transmitter diversity techniques. | CO4 | 5 |
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| 5. |  | Explain MIMO channel capacity and diversity gain using relevant mathematical expression. | CO4 | 20 |
| (OR) | | | | |
| 6. |  | Elaborate spatial multiplexing and BLAST Architecture with neat diagrams. | CO4 | 20 |
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| 7. | a. | Illustrate and describe 802.11a/g – Orthogonal Frequency Division Multiplexing based Local Area Networks | CO6 | 10 |
| b. | Compare and contrast CDMA, FDMA and TDMA. | CO5 | 10 |
| (OR) | | | | |
| 8. | a. | State the need of Medium Access Control (MAC) protocol. With neat sketch, discuss the problems in wireless medium access.How the problem of collision is solved in the demand assigned multiple access (DAMA) and multiple access with collision avoidance (MACA) schemes? | CO5 | 10 |
| b. | Discuss code division multiple access technique used in third generation of cellular communication. | CO5 | 10 |
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|  | | **Compulsory**: |  |  |
| 9. | a. | Illustrate LTE system architecture and explain the logical channel processing mechanisms in LTE. | CO6 | 15 |
| b. | Discuss on hybrid beam forming architecture in mm Wave Communications. | CO6 | 5 |