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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**Supplementary Examination – June – 2017**

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| **Code :** | **14EC2038** | **Duration :** | **3hrs** |
| **Sub. Name :** | **CELLULAR MOBILE COMMUNICATION** | **Max. marks :** | **100** |

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

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Define Multiplexing. Explain in detail about different types of multiplexing. | CO1 | 15 |
| b. | Under the free-space path-loss model, what is the transmit power required to obtain a received power of 1 dBm for a wireless system with isotropic antennas(gainis1) and a carrier frequency of 5GHz, assuming adistance of 20m. | CO2 | 5 |
| (OR) | | | | |
| 2. | a. | In what way radio propagation on land different from that in free space? Explain about the signal propagation effect and free space path loss of radio signals | CO2 | 14 |
| b. | Write short notes on different digital modulation techniques used in communication. | CO1 | 6 |
| 3. | a. | Distinguish SDMA, CDMA, FDMA and TDMA multiple access techniques. | CO1 | 10 |
|  | b. | Describe CDMA multiple access technique and its features with necessary diagrams. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | Compare and contast different mobile communication technologies. | CO2 | 7 |
|  | b. | With neat diagrams, explain the concept of frequency reuse applied to cellular communication. | CO2 | 13 |
| 5. | a. | Illustrate the umbrella cell approach. | CO2 | 5 |
|  | b. | Sketch neatly and explain the GSM architecture and its different radio interfaces. | CO2 | 15 |
| (OR) | | | | |
| 6. | a. | Write short note on different in channel assignment strategies. | CO1 | 10 |
|  | b. | Discuss the effect of pathloss exponent (n=2, 3) on the frequency reuse for a cellular system with total of 250 duplex voice channels without frequency reuse. The service area is divided into 52 cells. The required signal-to-co-channel interference ratio is 12 dB. Determine (i) cell cluster size, (ii) the number of cell clusters in the service area and (iii) the maximum number of users in service at any point. | CO3 | 10 |
| 7. | a. | Point-out the features, advantages and disadvantages of GEO, LEO and MEO satellites | CO3 | 14 |
|  | b. | Brief about the different architectures of IEEE 802.11. | CO3 | 6 |
| (OR) | | | | |
| 8. | a. | Draw the 3 dimensional reference model of WATM and explain the functions of each layer and plane. | CO3 | 15 |
|  | b. | Name the two Wireless ATM working group and list out their roles. | CO3 | 5 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Discuss on different types of routing protocols in Mobile Adhoc Network. | CO2 | 6 |
|  | b. | Illustrate the functioning of Dynamic Source Routing (DSR) in Mobile Adhoc Network. | CO3 | 14 |