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 – April/May – 2017**

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| **Code :** | **14EC2050** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BASICS OF SATELLITE 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. | Elucidate about Satellite orbital parameters with necessary diagrams and equations. | CO1 | 15 |
| b. | Relate Kepler’s and Newton’s Law governing the motion of satellite. | CO1 | 5 |
| (OR) | | | | |
| 2. |  | Illustrate the uplink, downlink and transducer operational flow of satellite communication with neat diagram. | CO1 | 20 |
| 3. |  | Explicate the various satellite subsystems with necessary diagrams. | CO1 | 20 |
| (OR) | | | | |
| 4. | a. | The transmit power is 10 watts, and both the transmit and receive parabolic antennas have a diameter of 3 m. The antenna efficiency is 55% for both antennas. The satellite is in a GSO location, with a range of 35,900 km. The frequency of operation is 12 GHz (Ku band – 12 to 18 GHz; UL/DL – 14/12 GHz). Determine the received power, pr , and the power flux density, (pfd)r for the link. | CO2 | 14 |
|  | b. | Interpret TWTA and SSPA. | CO2 | 6 |
| 5. |  | Portray the various antenna design used in the uplink and downlink block of satellite communication. | CO2 | 20 |
| (OR) | | | | |
| 6. |  | Illustrate the design of satellite link with neat block diagram. | CO2 | 20 |
| 7. |  | Illustrate the FDMA and TDMA multiple access schemes used in satellite communication. | CO2 | 20 |
| (OR) | | | | |
| 8. |  | Discuss in detail about the factors of transmission impairments in satellite communication. | CO3 | 20 |
|  | | **Compulsory**: |  |  |
| 9. |  | Illustrate the necessity of satellite communication in DTH and other services. | CO3 | 20 |

ALL THE BEST