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 :** | **14EC2013** | **Duration :** | **3hrs** |
| **Sub. Name :** | **COMMUNICATION THEORY AND SYSTEMS** | **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. | Elaborate on the block diagram of communication system. | CO1 | 10 |
|  | b. | An Audio signal 15sin 2π(1500t) amplitude modulates a carrier 60 sin2π(100,000t)   1. Determine the Carrier & Message signal Amplitudes. 2. Determine the Carrier & Message signal frequencies. 3. Carrier Power & Total power 4. Determine the modulation factor 5. Determine the Bandwidth 6. Total sideband power in the transmitted signal. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Categorize on the various types of modulation. | CO1 | 8 |
| b. | Derive the mathematical analysis for Amplitude modulation with related waveforms and derive the expression for total power transmission. | CO1 | 12 |
| 3. | a. | Explain how an AM wave is generated using Balanced modulator with a neat diagram. | CO2 | 12 |
|  | b. | Provide a description on Envelope detector with related diagrams. | CO2 | 08 |
| (OR) | | | | |
| 4. | a. | Demonstrate on the Square law detector. | CO2 | 10 |
|  | b. | Discuss about the Frequency modulation with related waveforms. | CO1 | 10 |
| 5. | a. | Compare and contrast AM and FM. | CO1 | 10 |
|  | b. | Illustrate the principle of Varactor diode modulator. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Appraise on the advantages of Ratio detector and explain it with a neat diagram. | CO3 | 10 |
|  | b. | An FM wave is represented by the voltage equation  emod(t) = 40 Sin (7x106 t +7 sin 5x104 t)  Calculate   1. Modulating and Carrier frequency. 2. Frequency Deviation. 3. Modulation Index. | CO1 | 10 |
| 7. | a. | Demonstrate on SSB transmitter with necessary diagram. | CO2 | 10 |
|  | b. | Discuss in detail about the Tuned Radio Frequency receiver. | CO2 | 10 |
| (OR) | | | | |
| 8. | a. | Elaborate on FM transmitter indirect method with neat diagram. | CO2 | 10 |
|  | b. | Enumerate pictorially on the different blocks of ISB transmitter. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Derive the expression for signal to noise ratio in SSB-SC amplitude modulation sysem. | CO3 | 10 |
|  | b. | Deduce the expression for noise figure in three stage cascaded amplifier. | CO3 | 10 |