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



**End Semester Examination – Nov / Dec – 2019**

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| **Code :** | **17EC2071** | **Duration :** | **3hrs** |
| **Sub. Name :** | **COMMUNICATION ENGINEERING** | **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. | Discuss the various types of Analog modulation methods. | CO1 | 5 |
| b. | Derive the mathematical analysis for AM signal and obtain the spectrum of AM wave. | CO1 | 10 |
| c. | What is the depth of modulation of a amplitude modulated signal whose total transmitting power is 1200W and carrier power is 850W? | CO1 | 5 |
| **(OR)** | | | | |
| 2. | a. | An Audio signal 10 sin 2π(1500t) amplitude modulates a carrier 20 sin2π(200,000t). Determine  i) the carrier and message signal amplitudes and frequencies.  ii) carrier power and total power.  iii) the modulation factor.  iv) the bandwidth.  v) What frequencies would show up in a spectrum analysis  of the modulated wave?  vi) total sideband power in the transmitted signal. | CO1 | 15 |
| b. | A 500W carrier is modulated to a depth of 80%. Calculate the total power of the amplitude modulated wave. | CO1 | 5 |
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| 3. | a. | Elaborate on the process of frequency modulation. | CO1 | 8 |
|  | b. | Discuss how a FM wave is generated using indirect method. | CO1 | 6 |
|  | c. | Describe any one method of DSBSC generation. | CO1 | 6 |
| **(OR)** | | | | |
| 4. | a. | Explain the principle of superhetrodyne receiver with neat block diagram. | CO2 | 10 |
|  | b. | With neat diagram explain PLL method of FM detection. | CO2 | 6 |
|  | c. | Comment on the need for measuring noise in decibels and calculate SNR for signal power of 500W and noise power of 0.5W. | CO2 | 4 |
|  |  |  |  |  |
| 5. | a. | How is delta modulation superior to other digital Pulse modulation techniques? Explain in detail. | CO2 | 12 |
|  | b. | Discuss in detail the pulse width modulation (PWM) technique. | CO2 | 8 |
| **(OR)** | | | | |
| 6. | a. | Describe in detail the different digital modulation methods. | CO2 | 12 |
|  | b. | List the types of noise and its effects on frequency modulated signal. | CO2 | 8 |
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| 7. | a. | Write short notes on:  i) Twisted Pair Cable.  ii) Coaxial Cable. | CO2 | 12 |
|  | b. | Draw the block diagram of a complete fiber optic communication system and explain in detail about anyone fiber optic detector. | CO2 | 8 |
| **(OR)** | | | | |
| 8. | a. | Elaborate on Time division multiplexing system. | CO3 | 12 |
|  | b. | List the different multiplexing methods and discuss their advantages and disadvantages. | CO3 | 8 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Draw the block diagram of color TV receiver and explain in detail. | CO3 | 15 |
|  | b. | Discuss the difference between LED and LCD Television. | CO3 | 5 |