**SRM Institute of Science and Technology**

**College of Engineering and Technology**

**DEPARTMENT OF ECE**

SRM Nagar, Kattankulathur – 603203, Chengalpattu District, Tamilnadu

Academic Year: 2022-23 (Odd)

Assignment : 2 Date: 26/09/2022

Course Code & Title: 18ECC205J – Analog and Digital Communication

Year & Sem: V Max. Marks: 20





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| **S No** | **Answer All Questions** | **Marks** | **CO** | **BL** | **PO** |
| 1. | Show that the figure of merit of an AM receiver operating on a single tone AM is **FOM = m2/ (2+m2)**, where m is the modulation index or percent modulation. | 5 | 2 | 3 | 1 |
| 2. | A single tone modulating signal Em\*cosωmt, frequency modulates a carrier A\*cosωct. Show that  a) The detector output signal to noise ratio is proportional to the square of bandwidth of the FM signal.  b) The figure of merit is given by **γFM = (3/2)\* m2f** | 5 | 2 | 3 | 1 |
| 3. | Derive an expression for signal to quantization noise ratio for a PCM system which employs linear quantization technique. Given that input to the PCM system is a sinusoidal signal. | 5 | 3 | 3 | 2 |
| 4. | a. Compare PCM, DPCM and Delta modulation techniques.  b. A delta modulator system is designed to operate at five times the Nyquist rate for a signal having a bandwidth equal to 3 KHz bandwidth. Calculate the maximum amplitude of a 2 KHz input sinusoid for which the delta modulator does not have a slope over load. Given that the quantizing step size is 250 mV. | 3  2 | 3  3 | 2  3 | 2  2 |

**Course Outcome (CO) and Bloom’s level (BL) Coverage in Questions**

**Evaluation Sheet**

**Name of the Student: Register No.:**

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| --- | --- | --- | --- | --- | --- |
| **Answer ALL questions** | | | | | |
| **Q. No** | **CO** | **PO** | **Maximum Marks** | **Marks Obtained** | **Total** |
| **1** | **CO2** | **PO1** | **5** |  |  |
| **2** | **CO2** | **PO1** | **5** |  |
| **3** | **CO3** | **PO4** | **5** |  |
| **4** | **CO3** | **PO4** | **5** |  |  |

**Consolidated Marks:**

|  |  |  |
| --- | --- | --- |
| **CO** | **Maximum Marks** | **Marks Obtained** |
| **2** | **10** |  |
| **3** | **10** |  |
| **Total** | **20** |  |

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| --- | --- | --- |
| **PO** | **Maximum Marks** | **Marks Obtained** |
| **1** | **10** |  |
| **4** | **10** |  |
| **Total** | **20** |  |

**Signature of Course Teacher**