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



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

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|  |  |  |  |
| **Code :** | **17MA2003** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MATHEMATICAL TRANSFOMS** | **Max. Marks :** | **100** |

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

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | **Marks** |
| 1. | a. | Find . | CO1 | 10 |
| b. | Find . | CO1 | 10 |
| **(OR)** | | | | |
| 2. | a. | Find the Laplace Transform of the periodic function given by with period *2a.* | CO1 | 10 |
| b. | Find . | CO1 | 10 |
|  |  |  |  |  |
| 3. | a. | Find using partial fraction. | CO2 | 10 |
| b. | Find using convolution theorem. | CO2 | 10 |
| **(OR)** | | | | |
| 4. | a. | Find . | CO2 | 10 |
| b. | Using Laplace Transform solve given *y(0) = 2* and . | CO2 | 10 |
|  |  |  |  |  |
| 5. | a. | Find the Fourier Transform of and hence deduce that . | CO3 | 10 |
| b. | Find the Fourier Cosine Transform e – ax and hence find the Fourier Sine Tansform of *x e – ax*, where *a ≥ 0.* | CO3 | 10 |
| **(OR)** | | | | |
| 6. | a. | Determine the Fourier Sine Transform of , *n > 0.* | CO3 | 10 |
| b. | Evaluate using Parseval’s Identity, where *a* is a constant. | CO3 | 10 |
|  |  |  |  |  |
| 7. | a. | Find the Z-transform of and, where *r* is a constant. | CO4 | 10 |
| b. | Verify the Final Value Theorem for . | CO4 | 10 |
| **(OR)** | | | | |
| 8. | a. | Find and hence evaluate and , where *a* and *b* are constants. | CO5 | 10 |
| b. | Find and hence evaluate and . | CO5 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Find the inverse Z-transform of using partial fraction method. | CO6 | 10 |
| b. | Use Z- transform to solve the difference equation.  subject to . | CO6 | 10 |

**Course Outcome:**

**The students will be able to**

CO1: discriminate &learn all the properties of Laplace Transform.

CO 2: apply Laplace Transforms in mechanical & signal system engineering problems.

CO 3: evaluate certain definite integrals with infinite limits using Fourier Transform.

CO 4: categorize Z-Transform of sequence and series.

CO 5: list the formulas & properties of Z-Transform & Inverse Z-Transform.

CO 6: solve difference and differential equations problems in their engineering fields.