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



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

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| **Code :** | **18MA2004** | **Duration :** | **3hrs** |
| **Sub. Name :** | **TRANSFORMS, INTEGRATIONS AND GRAPH THEORY** | **Max. Marks :** | **100** |

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| **Q. No.** | **Questions** | **Course Outcome** | **Marks** |
| **PART – A (10X1 = 10 MARKS)** | | | |
| 1. | Find L{cos 4t}.. | CO1 | 1 |
| 2. | Find . | CO1 | 1 |
| 3. | Give the Fourier sine transform pair. | CO2 | 1 |
| 4. | If is the Fourier transform of the function , then is \_\_\_\_\_\_\_\_\_. | CO2 | 1 |
| 5. | Find . | CO3 | 1 |
| 6. | Find . | CO3 | 1 |
| 7. | State the Cauchy’s integral formula. | CO5 | 1 |
| 8. | Evaluate , where . | CO5 | 1 |
| 9. | Give the formula to find using Trapezoidal rule. | CO5 | 1 |
| 10. | Give the formula to find using Simpson’s  rule. | CO5 | 1 |

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| **PART – B (6 X 3 = 18 MARKS)** | | | |
| 11. | Find . | CO1 | 3 |
| 12. | Find the Fourier transform of the function . | CO2 | 3 |
| 13. | Evaluate . | CO3 | 3 |
| 14. | Find the residue of . | CO5 | 3 |
| 15. | From the table find the area bounded by the curve  and the - axis   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | x | -3 | -2 | -1 | 0 | 1 | 2 | 3 | |  | 10 | 5 | 2 | 1 | 2 | 5 | 10 | | CO5 | 3 |
| 16. | Draw the picture of the graph  defined by , where , , and , , , , , , , , and . | CO6 | 3 |

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| **PART – C (6 X 12 = 72 MARKS)**  **(In Answer any five Questions from Q.no 17 to 23. Q.No 24 is a Compulsory Question)** | | | | |
| 17. | a. | Find the Laplace Transform of . | CO1 | 6 |
| b. | Evaluate  by convolution method. | CO1 | 6 |
|  |  |  |  |  |
| 18. | a. | Show that  and and hence Find the Fourier sine transform of. | CO2 | 12 |
|  |  |  |  |  |
| 19. | a. | Evaluate . | CO3 | 4 |
| b. | Evaluate . | CO3 | 4 |
| c. | Find the inverse Z – transform of . | CO3 | 4 |
|  |  |  |  |  |
| 20. | | Evaluate . | CO5 | 12 |
|  | |  |  |  |
| 21. | | Evaluate  by using , (i) Trapezoidal rule, (ii) by Simpson’s rules. Verify your answer by actual integration. | CO5 | 12 |
|  | |  |  |  |
| 22. | | Using the Z – transform, solve the the difference equation , , . | CO4 | 12 |
|  | |  |  |  |
| 23. | | Evaluate , using numerical techniques and hence check your answer by actual integration. | CO5 | 12 |
|  | | **Compulsory:** | | |
| 24. | | Find a maximum flow in the given network. | CO6 | 12 |