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



**End Semester Examination – Nov/Dec - 2017**

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| **Code :** | **16MA1002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **CALCULUS AND TRANSFORMS** | **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. | Verify Rolle’s Theorem for  in | CO 1 | 10 |
| b. | If prove that | CO 1 | 10 |
| (OR) | | | | |
| 2. | a. | Find the nth derivative of | CO 1 | 10 |
| b. | If using Maclaurin’s theorem, show that for | CO 1 | 10 |
| 3. | a. | Evaluate  over the positive quadrant of the circle | CO 1 | 10 |
|  | b. | Prove that | CO 1 | 10 |
| (OR) | | | | |
| 4. |  | Find the volume of the ellipsoid | CO 1 | 20 |
| 5. | a. | Solve | CO 1 | 10 |
|  | b. | Solve | CO 1 | 10 |
| (OR) | | | | |
| 6. |  | Show that the differential equation for the current i in an electrical circuit containing an inductance L and a resistance R in series and acted on by an electromotive force Esinat satisfies the equation . Find the value of the current at any time t, if initially there is no current in the circuit. | CO 1 | 20 |
| 7. |  | Find the Fourier transform of ,    Hence evaluate | CO 1 | 20 |
| (OR) | | | | |
| 8. | a. | Find the Laplace Transform of , sinh3t | CO 1 | 10 |
|  | b. | Evaluate  and | CO 1 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Express , as a Fourier series of periodicity  containing i. cosine terms only ii. sine terms only. | CO 1 | 15 |
|  | b. | State Dirichlet’s conditions. | CO 1 | 5 |

ALL THE BEST