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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**End Semester Examination – May – 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. | If , find | CO 1 | 10 |
| b. | In the mean value theorem , determine c lying between a and b, if | CO 1 | 10 |
| (OR) | | | | |
| 2. | a. | Using Maclaurin’s series,expand tanx upto the term containing | CO 1 | 10 |
| b. | Find the nth derivative of | CO 1 | 10 |
| 3. | a. | Evaluate over the area between  and y = x. | CO 1 | 10 |
|  | b. | If n is a positive integer, prove that | CO 1 | 4 |
|  | c. | Evaluate (i)  (ii) | CO1 | 6 |
| (OR) | | | | |
| 4. |  | Evaluate , where V is the volume of the tetrahedron whose vertices are (0,0,0),(0,1,0),(1,0,0) and (0,0,1) | CO 1 | 20 |
| 5. | a. | Solve | CO 1 | 10 |
|  | b. | A body originally at 80 cools down to 60 in 20 minutes,the temperature of the airbeing 40. What will be the temperature of thebody after 40 minutes from the original? | CO 3 | 10 |
| (OR) | | | | |
| 6. |  | Solve | CO 3 | 20 |
| 7. | a. | Solve | CO 3 | 10 |
|  | b. | Find the Laplace Transform of | CO 2 | 10 |
| (OR) | | | | |
| 8. | a. | (i) If ,then prove that  (ii) If ,then prove that | CO 2 | 10 |
|  | b. | Find the Fourier transform of | CO 2 | 10 |
|  | | **Compulsory**: |  |  |
| 9. |  | Obtain the Fourier series expansion of  Hence deduce the following: | CO 3 | 20 |

ALL THE BEST