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



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

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| **Code :** | **18MA1008** | **Duration :** | **3hrs** |
| **Sub. Name :** | **ORDINARY DIFFERENTIAL EQUATIONS AND COMPLEX VARIABLES** | **Max. Marks :** | **100** |

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| **Q. No.** | **Questions** | **Course**  **Outcome** | **Marks** |
| **PART – A (10X1=10 MARKS)** | | | |
| 1. | Define Gamma function. | CO1 | 1 |
| 2. | Write down the formula for in Cartesian form. | CO1 | 1 |
| 3. | Find the order and degree of the ordinary differential equation | CO2 | 1 |
| 4. | Write the solution of the Clairaut’s equation | CO2 | 1 |
| 5. | Write the Legendre polynomial  . | CO3 | 1 |
| 6. | If the roots are 2,2, write down the Complementary Function. | CO3 | 1 |
| 7. | Write the Cauchy Riemann equation in Cartesian form. | CO4 | 1 |
| 8. | Find the fixed points of | CO4 | 1 |
| 9. | Write the residue formula for pole of order two. | CO5 | 1 |
| 10. | Evaluate  on | CO5 | 1 |

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| **PART – B (6 X 3 = 18 MARKS)** | | | |
| 11. | Evaluate | CO1 | 3 |
| 12. | Find the value of | CO2 | 3 |
| 13. | Find the particular integral of | CO3 | 3 |
| 14. | Check whether it is analytic, | CO4 | 3 |
| 15. | Find the residue of  at its poles. | CO5 | 3 |
| 16. | Find | CO6 | 3 |

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| **PART – C (6 X 12 = 72 MARKS)**  **(Answer any five Questions from Q.no 17 to 23. Q.No 24 is a Compulsory Question)** | | | | |
| 17. |  | Prove that | CO1 | 12 |
| 18. |  | Find the center of curvature of the parabola  at , hence show that its Evolute is | CO2 | 12 |
| 19. |  | Solve | CO3 | 12 |
| 20. |  | Show that is harmonic and find its conjugate harmonic function. | CO4 | 12 |
| 21. |  | Solve by the method of variation of parameter | CO4 | 12 |
| 22. |  | Using Cauchy’s Integral formula,Evaluate , where c is the circle | CO5 | 12 |
| 23. |  | Evaluate  using contour integration. | CO5 | 12 |
| **Compulsory:** | | | |  |
| 24. |  | Find | CO6 | 12 |