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**End Semester Examination – Nov/Dec– 2018**

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| **Code :** | **18MA1002** | **Duration :** | **3hrs** |
| **Sub. Name :** | **MULTIVARIABLE CALCULUS AND LINEAR ALGEBRA** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Course**  **Outcome** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | | |
| 1. | Compute . | CO1 | 1 |
| 2. | Write the formula to find the surface area of revolution in polar form. | CO1 | 1 |
| 3. | Examine the sequencefor convergence. | CO2 | 1 |
| 4. | Define Power series. | CO2 | 1 |
| 5. | Write the formula for the Fourier Series of the function in the interval . | CO2 | 1 |
| 6. | ? | CO3 | 1 |
| 7. | Find of . | CO3 | 1 |
| 8. | **R**= ? | CO5 | 1 |
| 9. | Evaluate | CO4 | 1 |
| 10. | Define Stoke’s Theorem. | CO5 | 1 |

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| **PART B (6 X 3= 18 MARKS)** | | | |
| 11. | Evaluate dx. | CO1 | 3 |
| 12. | Test for convergence the series | CO2 | 3 |
| 13. | Find and for the Fourier Series from  to | CO2 | 3 |
| 14. | If evaluate and. | CO3 | 3 |
| 15. | Evaluate the integral | CO4 | 3 |
| 16. | Solve the equation by Cramer’s Rule. | 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. | a. | Find the evolute of the Parabola | CO1 | 7 |
| b. | Find the surface area of the solid generated by the revolution of the astroid about the y axis. | CO1 | 5 |
|  |  |  |  |  |
| 18. | a. | Test the convergence of the series . | CO2 | 4 |
| b. | Discuss the convergence of the series | CO2 | 4 |
| c. | State the values of x for which the series converge. | CO2 | 4 |
|  |  |  |  |  |
| 19. | a. | Obtain the Fourier Series for f(x)=in the interval | CO2 | 6 |
| b. | Obtain the first three co efficient in the Fourier Cosine series for y, where y is given in the following table:   |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | | x | 0 | 1 | 2 | 3 | 4 | 5 | | y | 4 | 8 | 15 | 7 | 6 | 2 | | CO2 | 6 |
|  |  |  |  |  |
| 20. | a. | If Z=f(x+ct)+φ(x-ct), prove that . | CO3 | 6 |
| b. | Find the maximum and minimum value of | CO3 | 6 |
|  |  |  |  |  |
| 21. | a. | Change the order of integration in I=and hence evaluate. | CO4 | 7 |
| b. | Evaluate | CO4 | 5 |
|  |  |  |  |  |
| 22. | a. | Express the integral in terms of gamma function. | CO3 | 6 |
| b. | Find the first and second partial derivatives of | CO3 | 6 |
|  |  |  |  |  |
| 23. | a. | Find the equation of the tangent plane and the normal to the surface as (2,2,6). | CO5 | 6 |
| b. | Find the eigen values and eigen vectors of the matrix A=. | CO6 | 6 |
| **Compulsory:** | | | |  |
| 24. | a. | Solve the equation  by matrix method. | CO6 | 6 |
| b. | Verify Cayley- Hamilton Theorem for the matrix A= and hence find the inverse. | CO6 | 6 |