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



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

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| **Code :** | **14MA1001** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **BASIC MATHEMATICS FOR ENGINEERING** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Marks** |
| **PART-A(10X1=10 MARKS)** | | |
| 1. | \_\_\_\_\_\_\_\_\_\_\_\_. | 1 |
| 2. | Write the equation of the line passing through and \_\_\_\_\_\_\_\_\_\_. | 1 |
| 3. | \_\_\_\_\_\_\_\_\_\_\_\_. | 1 |
| 4. | Differentiate | 1 |
| 5. | Taylor’s series of a function about is called\_\_\_\_\_\_\_\_\_\_\_\_. | 1 |
| 6. | Define Jacobians. | 1 |
| 7. | If and  are perpendicular then \_\_\_\_\_\_\_\_\_\_\_\_\_. | 1 |
| 8. | Find if the position vectors of A and B are and | 1 |
| 9. | A is a skew-symmetric matrix if and only if \_\_\_\_\_\_\_\_\_\_\_\_\_. | 1 |
| 10. | Write any two types of a matrix. | 1 |

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| **PART B(5 X 3= 15 MARKS)** | | |
| 11. | Find the angle between the pair of lines:. | 3 |
| 12. | Integrate using integration of parts. | 3 |
| 13. | Expand as a Maclaurin series about . | 3 |
| 14. | Write the Cartesian equations of the line passing through the origin and parallel to the vector whose direction ratios are (4, 5, -2). | 3 |
| 15. | Solve by Cramersmethod . | 3 |

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| **PART C(5 X 15= 75 MARKS)** | | | |
| 16. | a. | If n is a positive integer, prove that  (1 + i)n + (1 – i)n = 2n+1.cos. | 8 |
| b. | Prove the identity . | 3 |
| c. | If A and B are the points and , the find the point P which divides AB internally in the ratio . | 4 |
| (OR) | | | |
| 17. | a. | Expand  using binomial theorem. | 5 |
| c. | Resolve into partial fractions. | 10 |
| 18. | a. | Differentiate. | 7 |
| b. | Differentiate | 3 |
| c. | If find . | 5 |
| (OR) | | | |
| 19. | a. | Evaluate . | 7 |
| b. | Evaluate . | 8 |
| 20. | a. | Expand about upto the third term using Taylors series. | 10 |
| b. | If ,and , evaluate . | 5 |
| (OR) | | | |
| 21. | a. | If and , prove that . | 10 |
| b. | If where ,and , find . | 5 |
| 22. | a. | Find the Vector and Cartesian equation of the plane passing through (2,-1, 1) , (1,4,5) and parallel to the vector . | 8 |
| b. | Find the Vector and Cartesian equation of the plane passing through the points  (2,2,-1),(3,4,2) and (7,0,6). | 7 |
| (OR) | | | |
| 23. | a. | Find the angle between the linesand . | 5 |
| b. | Show that the lines  and intersect and hence find the point of intersection. | 10 |
| 24. |  | Find the Eigen values and the Eigen vectors of the matrix . | 15 |
| (OR) | | | |
| 25. |  | Find the Eigen values and the Eigen vectors of the matrix . | 15 |

ALL THE BEST