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** | **Course outcome** | **Marks** |
|  | **PART-A(10X1=10 MARKS)** | | |
| 1. | \_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 2. | The equation of the line passing through and can be written as\_\_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 3. | \_\_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 4. | Differentiate | CO1 | 1 |
| 5. | Taylor’s series of a function about is called \_\_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 6. | Define Jacobians. | CO1 | 1 |
| 7. | If and  are perpendicular then \_\_\_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 8. | Find if the position vectors of A and B are and | CO1 | 1 |
| 9. | A is a skew-symmetric matrix if and only if \_\_\_\_\_\_\_\_\_\_\_. | CO1 | 1 |
| 10. | Write any two types of a matrix. | CO1 | 1 |

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|  | | **PART B(5 X 3= 15 MARKS)** | | |
| 11. | Find the angle between the pair of lines:. | | CO1 | 3 |
| 12. | Integrate using integration of parts. | | CO1 | 3 |
| 13. | Expand as a Maclaurin series about | | CO1 | 3 |
| 14. | Write the Cartesian equations of the straight line passing through the origin and parallel to the vector whose direction ratios are (4, 5, -2). | | CO1 | 3 |
| 15. | Solve by Cramers method . | | CO1 | 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 | CO1 | 8 | |
| b. | | Prove the identity . | CO1 | 3 | |
| c. | | If A and B are the points and , the find the point P which divides AB internally in the ratio . | CO1 | 4 | |
| (OR) | | | | | | |
| 17. | a. | | Expand  using binomial theorem. | CO1 | 5 | |
| b. | | Resolve into partial fractions. | CO1 | 10 | |
| 18. | a. | | Differentiate . | CO1 | 7 | |
| b. | | Differentiate | CO1 | 3 | |
| c. | | If find . | CO1 | 5 | |
| (OR) | | | | | | |
| 19. | a. | | Evaluate . | CO1 | 7 | |
| b. | | Evaluate . | CO1 | 8 | |
| 20. | a. | | Expand about  up to the third term using Taylor’s series. | CO1 | 10 | |
| b. | | If ,and . Evaluate . | CO1 | 5 | |
| (OR) | | | | | | |
| 21. | a. | | If  and . Prove that . | CO1 | | 10 |
| b. | | If  where, ,and , find . | CO1 | | 5 |
| 22. | a. | | Find the vector and Cartesian equation of the plane passing through (2,-1, 1) and (1,4,5) and parallel to the vector . | CO1 | | 8 |
| b. | | Show that the lines  and intersect and hence find the point of intersection. | CO1 | | 7 |
| (OR) | | | | | | |
| 23. | a. | | Find the angle between the lines  and . | CO1 | 7 | |
| b. | | Find the vector and Cartesian equation of the plane passing through the points (2,2,-1), (3,4,2) and (7,0,6). | CO1 | 8 | |
| 24. |  | | Find the eigen values and the eigen vectors of the matrix . | CO1 | 15 | |
| (OR) | | | | | | |
| 25. | a. | | Find the inverse of the matrix. | CO1 | 8 | |
|  | b. | | Find the rank of the matrix . | COI | 4 | |
|  | c. | | Find the determinant of the matrix. | CO1 | 3 | |

ALL THE BEST