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

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

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| **Code :** | **17MA1001** | **Duration :** | **3hrs** |
| **Sub. Name :** | **Basic Mathematics For Engineering** | **Max. marks :** | **100** |

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| **Q. No.** | **Questions** | **Course Outcome** | **Marks** |
|  | **PART-A(20X1=20 MARKS)** | | |
| 1. | Using the trigonometric identities prove that | CO1 | 1 |
| 2. | Find the distance between the points (4,3,-6) and (-2,1,-3). | CO2 | 1 |
| 3. | How many terms are there in the expansion of ? | CO2 | 1 |
| 4. | Write properties of Binomial coefficients. | CO1 | 1 |
| 5. | Evaluate | CO3 | 1 |
| 6. | Find if y = ax | CO3 | 1 |
| 7. | Differentiate the function ex(x+logx) with respect to x. | CO3 | 1 |
| 8. | Evaluate | CO4 | 1 |
| 9. | Find for z = x3+y3-3axy . | CO3 | 1 |
| 10. | State Eulers theorem on homogenous functions. | CO1 | 1 |
| 11. | Write the formula of Taylor’s theorem for function of two variables. | CO5 | 1 |
| 12. | In polar co-ordinates x = rcos , y = rsin find the value of | CO3 | 1 |
| 13. | Define unit vector and null vector. | CO6 | 1 |
| 14. | Calculate the modulus and the unit vector along the sum of vectors.  , 2, | CO6 | 1 |
| 15. | Find the angle between the vectors (2i + 6j + 3k) and (12i – 4j + 3k). | CO6 | 1 |
| 16. | Find the area of the parallelogram whose adjacent sides are i-2j+3k and 2i + j – 4k. | CO6 | 1 |
| 17. | Evaluate the cofactor of a in the determinant | CO7 | 1 |
| 18. | Define diagonal matrix | CO1 | 1 |
| 19. | Find the rank of the matrix | CO7 | 1 |
| 20. | Find the trace of the matrix A = | CO2 | 1 |

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|  | **PART B(10 X 5= 50 MARKS)**  **(Answer any 10 from the following)** | | |
| 21. | Resolve into partial fractions | CO1 | 5 |
| 22. | Show that the points A(-1,-1,5) , B(2,5,3) , C(4,2,-3) and D(1,-4,-1) form a square. | CO2 | 5 |
| 23. | Differentiate the function f(x) = e2x with respect to x from first-principles. | CO3 | 5 |
| 24. | Using Logarithmic differentiation method find if y = . | CO3 | 5 |
| 25. | If x3 + y3 = 3axy, find . | CO3 | 5 |
| 26. | If z = f(x+ct) + (x-ct) , prove that . | CO3 | 5 |
| 27. | If , , . Show that the jacobian of y1 , y2 , y3 with respect to x1 , x2, x3 is 4. | CO3 | 5 |
| 28. | Show that the points -6I+3J+2K , 3I-2J+4K , 5I+7J+3K and -13I+17J-K are coplanar. | CO6 | 5 |
| 29. | Find the equation of the plane which passes through the points A(0,1,1) , B(1,1,2) and C(-1,2,2). | CO6 | 5 |
| 30. | If = 0 in which a,b,c are different, show that abc=1 | CO7 | 5 |
| 31. | If A = and B = form the product of AB, Is BA defined? | CO7 | 5 |
| 32. | Find the Eigen values and Eigen Vectors of the matrix A = | CO7 | 5 |

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|  | **PART C(2 X 15= 30 MARKS)**  **(Answer any 2 from the following)** | | | |
| 33. | a. | Find the coefficient of xn in the expansion of in ascending powers of x. | CO2 | 7 |
| b. | Find the inverse of A = | CO7 | 8 |
| 34. | a. | Expand excosy near the point (1,) by Taylor’s theorem. | CO5 | 8 |
| b. | Find the equation of the plane which passes through the point (3,-3,1) and normal to the line joining the points (3,2,-1) and (2,-1,5). | CO6 | 7 |
| 35. | a. | Determine the rank of the matrix | CO7 | 8 |
| b. | Evaluate by using integration by parts. | CO4 | 7 |

ALL THE BEST