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

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

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

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| **Q. No.** | **Sub Div.** | **Questions** | **Course**  **Outcome** | | **Marks** |
| 1. | a. | Find sin(α + ), cos(α + ), sin(α - ) and cos(α - ) if sinα =  and cos =. | CO1 | | 10 |
| b. | When A + B + C = 180o, show that tanA + tanB + tanC = tanAtanBtanC. | CO1 | | 10 |
| (OR) | | | | | |
| 2. | a. | Resolve into partial fractions. | CO1 | | 10 |
| b. | Expand (2*x* – 3*y*) 6 using binomial theorem. | CO1 | | 5 |
| c. | Find the coordinates of the point which divides the line segment joining the points (2,5) and (-3,-2) externally in the ratio 4:3. | CO1 | | 5 |
|  |  |  |  | |  |
| 3. | a. | Evaluate | CO3 | | 5 |
| b. | If , prove that | CO3 | | 10 |
| c. | Find  for | CO3 | | 5 |
| (OR) | | | | | |
| 4. | a. | Evaluate . | CO3 | | 10 |
| b. | Evaluate  . | CO3 | | 5 |
| c. | Evaluate dx. | CO3 | | 5 |
|  |  |  |  | |  |
| 5. | a. | If u=, then prove that x+y. | CO1 | | 10 |
| b. | Find Taylor’s series to represent the function f(x)= sinx about the point x=0. | CO1 | | 5 |
| c. | If  , find . | CO1 | | 5 |
| (OR) | | | | | |
| 6. | a. | If x=rcosθ, y=rsinθ and u=f(x,y), prove that | | CO1 | 10 |
| b. | Expand ex cos y about (0, π/2) upto the third term using Taylor series. | | CO1 | 10 |
|  |  |  | |  |  |
| 7. | a. | If ,, and ,  Find (i)  (ii)  (iii)  (iv) .. | | CO1 | 10 |
| b. | Find the projection of , where P,Q,A,B are the points  (-2,1,3), (3,2,5), (4,-3,5), (7,-5,-1) respectively. | | CO1 | 5 |
| c. | Prove that the vectors and are perpendicular. | | CO1 | 5 |
| (OR) | | | | | |
| 8. | a. | Show that the lines and are skew lines and find the distance between them. | | CO1 | 10 |
| b. | Find the vector and Cartesian equation of the plane passing through (2,-1, 1) and (1,4,5) and parallel to the vector . | | CO1 | 10 |
|  | |  | |  |  |
|  | | **Compulsory**: | |  |  |
| 9. | a. | Find the eigen values and the eigenvectors of the matrix | | CO2 | 10 |
| b. | Solve the system of equations by Cramer’s method. | | CO2 | 10 |