**CENTURION UNIVERSITY OF TECHNOLOGY & MANAGEMENT, PARALAKHEMUNDI, ODISHA**

***Subject Name: - Complex Analysis & Numerical Methods, Subject Code:-CUTM1003***

**Odd *Semester (BTECH)-2023-24***

***ASSIGNMENT-I***

***Short Questions***

1. What is an analytic function? Give one example of it.
2. What is a harmonic function? Give one example of it.
3. Let  be analytic and constant then show that constant.
4. Test the analyticity of the function
5. Define an analytic function. Give an example of a function which is differentiable at a point but not analytic there.
6. Show that the function f (z) =Re z =x is not differentiable at any z.
7. Show that f (z) =  is differentiable only at z = 0. So it is nowhere analytic.
8. Prove that where
9. Given , find its conjugate and hence
10. Is there any analytic function f (z) whose imaginary part is v(x, y) =and why?
11. Find the analytic function, where.
12. Prove that  is harmonic.
13. Given u(x, y) =ex cos y+e-y cos x, find its conjugate v(x, y) and hence
14. Is there any analytic function f (z) whose imaginary part is v(x, y) =and why
15. Find the value of  , where C= 

***Long Questions***

1. Find an analytic function whose real part is given by .
2. Find an analytic function whose real part is given by
3. Find the value of  , Where C is the unit circle around the origin.
4. Find the value of 
5. Find the value of 
6. Find the value of , Where C = {z: = 1}.
7. Find the value of  , where C= {z:  =2}.
8. Find the values of the following integral:

, where C= {z:  =2}.

1. Find the values of the integral:  , Where C = {z: = 1.5}.
2. Find the values of the integral:

 , Where C = {z: = 2}.