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

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

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

***ASSIGNMENT-II***

***Short Questions***

1. What do you mean by Maclaurin series?
2. Develop Maclaurin series of.
3. Develop Maclaurin series of
4. Develop Maclaurin series of
5. What do you mean by Taylor series?
6. Develop the following function in a Taylor series with the given point as Centre: f(z)=ez , centre=a
7. Develop the following function in a Taylor series with the given point as Centre: f(z)=cos πz , centre=2
8. Expand the function f (z) =  in a Taylor’s series around the origin.
9. Determine the Taylor’s expansion of f (z) = about the point a=2.
10. What do you mean by Laurent series?
11. Find the Laurent series expansion of the following function, at z=0.
12. What do you mean by poles?
13. What do you mean by residue?
14. Find the residue for the function.
15. ,using residue theorem

***Long Questions***

1. Find the Laurent series expansion of

 a)Valid in the region 1 <  < 2.

b) **** Valid in the region 1 < 

1. Find the Laurent series expansion of 

 If (i) <1, (ii) 1<<2.

1. Find the poles of the function f (z) = with respective order
2. Determine the Residues at the poles, 
3. Find the poles and the residues at the poles of the function

 f(z) =at z=2. .

1. Use the Cauchy’s residue theorem to evaluate the following:

Where C = {z: = 3}.

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Where C = {z: =2.5}.

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Where C = {z: =2.5}.

1. Evaluate the following integration using the residue theorem:

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1. Find the value of the following real integral using the residue theorem:



1. Evaluate the following integrations using the residue theorem:

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