

**A12**

**Sreenidhi Institute of Science & Technology**

(An Autonomous Institution)

**Code No: 121MA05**

**B. TECH. II – Year I – Semester Examinations, MAY/JUNE, 2014 (Supplementary)**

**ENGINEERING MATHEMATICS - III (Common to all Branches Except BT)**

**Time: 3 Hours Max. Marks: 70**

**Note: No additional answer sheets will be provided.**

**Part - A (Objective Type)**

**Max.Marks:20**

**Answer all QUESTIONS.**

1. Define Gamma function and field the value of .
2. An electrostatic field in the xy – plane is given by the potential function Φ=, find the stream function.
3. Show that the function is harmonic.
4. Expand in the region IzI<1.
5. Show that .
6. For equispaced intervals write down Newton’s forward interpolation formula.
7. Using Newton - Raphson Method evaluate  go up to two iterations.
8. Write down general quadrature formula and hence write down trapezoidal rule.
9. Write down fourth order Runge-Kutta formula for finding the solution of initial value problem.
10. State Cauchy’s residue theorem.

**Part – B**

**Max. Marks: 50**

**ANSWER ANY FIVE QUESTIONS. EACH QUESTION CARRIES 10 MARKS.**

1. (a) Show that . (6 M)

(b) Express the polynomial in terms of Legendre polynomials (4 M)

1. (a) Find the orthogonal trajectories of family of curves .

(b) Verify Cauchy’s integral Theorem for taken over the boundary of a square

with vertices at ±1, ±i in counter- clockwise direction.

1. (a) Find the Taylor’s series expansion of about . Determine the regiom of convergence

(b) Evaluate

1. (a)Estimate the value of from the following table.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 20 | 25 | 30 | 35 | 40 | 45 |
|  | 354 | 332 | 291 | 260 | 231 | 204 |

(b) Apply Lagranger’s method to find the value of when from the following data.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 5 | 6 | 9 | 11 |
|  | 12 | 13 | 14 | 16 |

1. (a) Find by Newton – Raphson Method, a root of the equation correct to 3 decimal places.

(b) Evaluate by using Simpson’s rule.

1. (a) Using bisection method find the root of the equation in four stages. (6 M)

(b) Evaluate using Trapezoidal rule with . (4 M)

1. (a) Find by Taylor’s method, the value of at to five places of decimals from .

(b) Using Eulers method, find an approximate value of corresponding to , given that .

1. (a) Find an approximate value of when if .

(b) Using Runge-Kutte Method , solve

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