**SET 1**

**SREENIDHI INSTITUTE OF SCIENCE & TECHNOLOGY**

**A14**

**( AN AUTONOMOUS INSTITUTION)**

**CODE NO: 4H314**

**B. TECH. II-YEAR I-SEMESTER EXAMINATIONS, DECEMBER 2015 (REGULAR)**

**ENGINEERING MATHEMATICS - III (EEE, ECM, ECE AND IT)**

**TIME: 3 HOURS MAX.MARKS: 70**

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

**SECTION-A**

**( 10x2=20m)**

**Answer all QUESTIONS. EACH QUESTION CARRIES 2 MARKS.**

1. Evaluate  using Gamma function.
2. Find the zeros and singularities of the function .
3. Obtain the finite Fourier sine transform of  .
4. Find the interval of unit length which contains the smallest positive root of .
5. Evaluate  with .
6. Find the approximate value of  for  using Taylor series method.
7. State Cauchy’s integral theorem.
8. Find the Fourier transform of .
9. Obtain the Lagrange’s interpolating polynomial for the following data :

|  |  |  |
| --- | --- | --- |
| x : | 2.5 | 3.5 |
| f(x): | 6 | 8 |

1. Find the iterative formula to find  using Newton-Raphson method.

**SECTION-B**

**( 5x10=50m)**

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

**1 a)** Prove that .

**b)** Prove that **.**

**2.a)** Determine the analytic function, where .

**b)** Evaluate , where C is  using Cauchy’s integral formula.

**3.** Using Fourier transform, solve the initial boundary value problem

 and  is finite as .

**4.a)** Use iteration method to find a root of the equation  correct to four decimal places.

**b)** Evaluate  **** using Simpson’s  rule with four sub intervals.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| x: | 1 | 1.4 | 1.8 | 2.2 |
| f(x): | 3.4 | 4.8 | 5.9 | 6.5 |

**5.a)**  Using Newton’s backward formula, find  for

**b)** Use Gauss forward difference formula to find  if .

**6.** Apply Milne’s method to find  for .

**7. a)** Find the Laurent series expansion of  valid in the region .

**b)** Evaluate .

**8.a)** Explain bisection method and use it to find the first two approximations to a root of  .

**b)** Find the value of  by Picard’s method, given that .

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