**Regulations:**

**A14**



**H.T No**

**Sreenidhi Institute of Science and Technology**

(An Autonomous Institution)

**Code No: 4H315 Date: 18-Dec-2019 (FN)**

**B.Tech II-Year I-Semester External Examination, Dec-2019/Jan-2020 (Supplementary)**

**Engineering Mathematics-III (Common to All Except BT)**

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

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

*b) All sub-parts of a question must be answered at one place only, otherwise it will not be valued.*

*c) Missing data can be assumed suitably.*

**Part - A Max.Marks:20**

**Answer all QUESTIONS.**

|  |  |  |
| --- | --- | --- |
| 1. | Define for any integer n. | [2M] |
| 2. | Discuss the analyticity of the complex function | [2M] |
| 3. | Find the Fourier sine transform of  . | [2M] |
| 4. | State the iterative scheme for finding  using Newton-Raphson’s method. | [2M] |
| 5. | Operate  for. | [2M] |
| 6. | Explain the Euler’s method to find solution of an ordinary differential equation. | [2M] |
| 7. | Explain Newton-Raphson method. | [2M] |
| 8. | Explain forward and backward differences. | [2M] |
| 9 | Show that | [2M] |
| 10. | Find the residue of | [2M] |

**Part – B Max.Marks:50**

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

|  |  |  |  |
| --- | --- | --- | --- |
| 11. | a) | Prove that the relation | [5M] |
|  | b) | Show that . | [5M] |
|  |  |  |  |
| 12. | a) | Discuss the analyticity of the function | [5M] |
|  | b) | Find the Laurent series expansion of the function  if | [5M] |
|  |  |  |  |
| 13. | a) | Find the Fourier sine transform of f(x) = 2e-5x+5e-2x ? | [5M] |
|  | b) | Find the Fourier cosine transform of | [5M] |
|  |  |  |  |
| 14. | a) | Using method of Bisection, find the real root of | [5M] |
|  | b) | Evaluate  using Simpson’s  and  rule. | [5M] |
|  |  |  |  |
| 15. | a) | Construct Newton’s forward interpolating polynomial for the following data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | x | 4 | 6 | 8 | 10 | | f(x) | 1 | 3 | 8 | 16 | | [5M] |
|  | b) | Using Lagrange’s interpolation find the polynomial f(x) for the following data   |  |  |  |  |  | | --- | --- | --- | --- | --- | | X | 0 | 1 | 2 | 5 | | f(x) | 2 | 3 | 12 | 147 | | [5M] |
|  |  |  |  |
|  |  |  |  |
| 16. |  | Apply 4th order Runge- Kutta method to find  in steps of 0.1 for the differential equation | [10M] |
|  |  |  |  |
| 17. | a) | Evaluate | [5M] |
|  | b) | Find poles and residues of the function. | [5M] |
|  |  |  |  |
| 18. | a) | Find real root of  using Newton-Raphson method. | [5M] |
|  | b) | Using Euler’s method of successive approximation, find and  for  the differential equation | [5M] |

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