**Regulations:**

**A18**



**H.T No**

**Sreenidhi Institute of Science and Technology**

(An Autonomous Institution)

**Code No: 7HC06 Date: 07-Jan-2020 (FN)**

**B.Tech I-Year I-Semester External Examination, Jan-2020 (Regular)**

**ENGINEERING MATHEMATICS - I (CIVIL, EEE, ME and ECE)**

**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. | Verify Rolle’s theorem for | [2M] |
| 2. | Evaluate | [2M] |
| 3. | Test for convergence of | [2M] |
| 4. | Find the directional derivative of in the direction of a vector at the point (1,2,0) | [2M] |
| 5. | Write the skew-symmetric matrix for | [2M] |
| 6. | Find the sum of the Eigen values of the matrix | [2M] |
| 7. | Find the value of | [2M] |
| 8. | Find the Fourier half range sine series for | [2M] |
| 9. | Find the Eigen values of the matrix | [2M] |
| 10. | Evaluate | [2M] |

**Part – B Max.Marks:50**

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

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| 11. | a) | Using Lagrange’s mean value theorem show that | [5M] |
|  | b) | Obtain the Taylor’s series expansion for about the point | [5M] |
|  |  |  |  |
| 12. | a) | Find the evaluate of the ellipse | [5M] |
|  | b) | Prove that | [5M] |
|  |  |  |  |
| 13. | a) | Find the Fourier series expansion for | [5M] |
|  | b) | Test for convergence of the series | [5M] |
|  |  |  |  |
| 14. | a) | Examine for maximum and minimum values. | [5M] |
|  | b) | Prove that | [5M] |
|  |  |  |  |
| 15. | a) | Find the rank of the matrix | [5M] |
|  | b) | Using Gauss-Jordan method, Find the inverse of the matrix | [5M] |
|  |  |  |  |
| 16. | a) | Using Cayley-Hamilton theorem find for the matrix | [5M] |
|  | b) | Determine the model matrix for  and hence diagonalize the matrix A | [5M] |
|  |  |  |  |
| 17. | a) | Verify Cauchy’s mean value theorem for | [5M] |
|  | b) | Evaluate | [5M] |
|  |  |  |  |
| 18. | a) | Show that the function    Is continuous at (0, 0). | [5M] |
|  | b) | Solve the system of equations | [5M] |

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