**Regulations:**

**A15**



**H.T No**

**Sreenidhi Institute of Science and Technology**

(An Autonomous Institution)

**Code No: 5H213 Date: 21-Jan-2020 (FN)**

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

**ENGINEERING MATHEMATICS – II (Common to All except BT)**

**Time: 3 Hours Max.Marks:75**

***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:25**

**Answer all QUESTIONS.**

|  |  |  |
| --- | --- | --- |
| 1. | Find the rank of the matrix A = | [3M] |
| 2. | Find the characteristic roots of Adj A, where | [3M] |
| 3. | Form the partial differential equation by eliminating the arbitrary constants a and b from z = (x+a)(y+b). | [3M] |
| 4. | If then find | [3M] |
| 5. | Find | [3M] |
| 6. | If f(x) is defined in the interval [-,] as f(x) = x2, then find the Fourier coefficient a0. | [2M] |
| 7. | For what values of λ and μ, the simultaneous equations x + y + z = 6, x + 2y + 3z = 10 and x + 2y + λz = μ have Unique Solution. | [2M] |
| 8. | Find | [2M] |
| 9. | Evaluate | [2M] |
| 10. | Solve p2 + q2 = 1 | [2M] |

**Part – B Max.Marks:50**

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

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| --- | --- | --- | --- |
| 11. | a) | Define the rank of a matrix and find the rank of the following matrix by reducing to Echelon form | [5M] |
|  | b) | Using Gauss-Jordan method, Solve 2x + 2y + 6z = 4 ; 2x + y + 7z = 6 ;  - 2x - 6y – 7z = -1 | [5M] |
|  |  |  |  |
| 12. |  | Find the Eigen Values and Eigen Vectors of | [10M] |
|  |  |  |  |
| 13. | a) | Solve p.Tanx + q.Tany = Tan z. | [5M] |
|  | b) | Solve p2 + q2 = x + y. | [5M] |
|  |  |  |  |
| 14. |  | Using Laplace transform , Solve y11(t) + 4 y1(t) + 4 y(t) = 6.e-t, y(0) = -2, y1(0) = 8. | [10M] |
|  |  |  |  |
| 15. |  | Using Z-transform, solve the difference equation un+2 + 2 un+1 + un = n, u0 = 0, u1 = 0. | [10M] |
|  |  |  |  |
| 16. | a) | Obtain the Fourier series for f(x) = in . | [5M] |
|  | b) | Find half-range Fourier sine series for f(x) = ax + b in 0 < x < 1. | [5M] |
|  |  |  |  |
| 17. |  | Verify Cayley-Hamilton Theorem for the matrix, and find inverse of the matrix. | [10M] |
|  |  |  |  |
| 18. | a) | Use the convolution theorem to find | [5M] |
|  | b) | Evaluate Z [ Sin n] and Z[ Cos n]. | [5M] |

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