

**A12**

**Sreenidhi Institute of Science and Technology**

(An Autonomous Institution)

**CODE NO: 3H315**

**B. TECH. II-YEAR I-SEMESTER EXAMINATIONS, DECR 2015 (SUPPLEMENTARY)**

**MATHEMATICS FOR BIOTECHNOLOGY - III (BT)**

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

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

**Part - A**

**10 x 2 =20M**

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

1. Find the rank of the matrix *A* = 
2. If is an eigen value of a non singular matrix prove that is an eigen value of
3. State Newton forward difference formula
4. Derive Newton’s iterative formula to find 
5. State Trapezoidal rule
6. State the Milne’s Predictor and corrector’s formulae for solving 
7. Using Cayley-Hamilton theorem find the inverse of
8. If *y(x0) = 2, y(x1) = 4* then compute the first divided difference *[x0, x1]* for *x0 = 0, x1 = 1*
9. Write the normal equations for fitting the curve
10. Reduce the matrix *A* =  to echelon form

**PART-B**

**Max.Marks:50**

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

1. (a) Reduce the matrix  to normal form and hence find its rank

(b) Solve  by Gauss elimination method

1. (a) Determine the Eigen values and Eigen vectors of 

(b) Show that the matrix satisfies its characteristic equation

1. (a) Estimate the value of  for the following data by Newton’s backward difference formula

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 |
|  | 0 | 5 | 22 | 57 | 116 |

(b) Given find by Newton divided

difference

1. (a) Compute a real root of correct to 3 decimal places by Regula Falsi method
2. Using Newton Raphson method, determine a real root of the equation 

correct to 4 decimal places

1. (a) Evaluate  using Simpson’s th rule taking h=

(b) Fit a straight line  from the following table

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 5 | 8 | 9 | 12 | 18 | 20 |
|  | 27 | 148 | 295 | 562 | 8985 | 12450 |

1. Using Runge Kutta method of fourth order, solve  with 
2. (a) Show that  and 

(b) Solve the equationsby LU decomposition method

1. (a) Find the values of  so that  is the best fit to the following data and

also estimate .

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 |
|  | 1.7 | 1.8 | 2.3 | 3.2 |

(b) Solve  by Taylor series method upto 4 terms and find 

-0-0-0-