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**Roll No. \_\_\_\_\_\_\_\_\_\_\_\_**

**BCA - 3216**

**BCA (III Semester) Examination, Dec.2018**

**COMPUTER APPLICATION**

**Numerical Methods**

*Time Allowed: Three Hours] [Maximum Marks: 70*

**Note:** Answer **all** questions.

 Scientific Calculator is allowed.

**Q.1.** Attempt any **six** of the following: **5\*6=30**

1. What are the differences between Regula-False and Newton-Raphson’s methods?
2. Discuss about Bisection method.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 1 | 2 | 3 | 4 | 5 |
| *f* (x) | 14.85 | 9.75 | 5.35 | 3.75 | 2.25 |

1. Form the backwart difference table from the given table values:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 1 | 2 | 3 | 4 | 5 |
| *f* (x) | 14.85 | 9.75 | 5.35 | 3.75 | 2.25 |

1. Prove that E= E
2. Compute the Value with Simpson’s rule by taking *h*=1
3. Find at *x=1.0* from the following values:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 1 | 2 | 3 | 4 | 5 |
| *f* (x) | 14.85 | 9.75 | 5.35 | 3.75 | 2.25 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 1.0 | 1.2 | 1.4 | 1.6 | 1.8 |
| Y | 5 | 8 | 14 | 23 | 30 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| X | 1 | 2 | 3 | 4 | 5 |
| *f* (x) | 14.85 | 9.75 | 5.35 | 3.75 | 2.25 |

1. Explain Gauss-Seidel iterative method for solving simultaneous linear equations.
2. What is backward substitution method?

**Q. 2.** Use false position method to find the real root of equation correct to three decimal places. **10**

**OR**

Find a real root of equation correct to 3 decimal places by using bisection method.

**Q. 3.** Find *f* (3) from the following table values by Lagrange’s formula: **10**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| X | -1 | 0 | 2 | 5 |
| *f* (x) | 10 | 7 | 7 | 22 |

**OR**

Find *y*(35) from the following values by Gauss’s forward formula:

*y(21)=18.4708, y(25)=17.8144, y(29)=17.1070,*

*y(33)=16.3432,and y(37)=15.5154*

**Q. 4.** Evaluate by Trapezoidal rule for *n=6.* **10**

**OR**

Compute the integral using Simpson’s three eight rule for *n=6*

**Q. 5.** Apply Gauses Elimination method to find the solution of the following system of linear equations **10**

**OR**

Apply Runge-Kutta fourth order method to find the value of y when *x=1.1*, given that and *y=1* when *x= 1.* Assume *h=0.1*