**SESSION DECEMBER 2022**

**PROGRAM BCA**

**SEMESTER III**

**COURSE CODE &amp; NAME DCA2101 &amp; COMPUTER ORIENTED NUMERICAL METHODS**

**SET-I**

**1. a) Find the Taylor’s series for the function about.**

**Ans: Taylor’s Series for a function of one variable:**

If f(x) is continuous and possesses continuous derivatives of order n in an interval that includes x = a, then in that

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**2. By constructing a difference table and taking the second- order difference as constant find the sixth term of the series 8, 12,19,29,42.**

**Ans:**

Let k be the sixth term of the series in the difference table

First we find the forward

**3. a) Let a function f(x) is given at point (0, 2), (2, 10), (4,15), (6,18), (8,22), (10,10). Find.**

**Ans:**

**b) Evaluate to four decimal places by Newton’s- Raphson formula.**

**Ans:** This is a very powerful method for finding the real root of an equation in form f(x) = 0.

**Method**

**Step 1:** Let x0 be an approximate root of the equation f(x) = 0.

If x1 = x0 + h (

**SET-II**

**4. Find the solution to the following system of equations using Jacobi’s iterative method for the first five iterations.**

Find the solution to the following system of equations

83x + 11y – 4z = 95

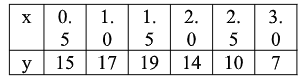
7x + 52y + 13z = 104

3x + 8y + 29z = 71

using Jacobi’s iterative method for the first five iterations

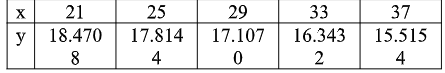
**Solution:** The given system is diagonally dominant. Rewrite the given system as

**5. Using the method of least squares, find the straight line that fits the following data:**



**Ans:**

**6. Find the value of y at x = 0 using Gauss Forward formula from the**



**Sol:** The difference table is