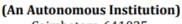


## SNS COLLEGE OF TECHNOLOGY





# Coimbatore-641035.

### **UNIT 2-PART B**

- 1. Find the 6<sup>th</sup> term of the sequence 8, 12, 19, 29, 42.
- 2. Find the n<sup>th</sup> term of the sequence 1,4,10,20,35,56,...
- 3. Given that  $y_5 = 4$ ,  $y_6 = 3$ ,  $y_7 = 4$ ,  $y_8 = 10$  and  $y_9 = 24$  find the value of  $\Delta^4 y_5$ .
- i) by using the difference table
- ii) without using the difference table
- 4. Given that  $u_0 = 2$ ,  $u_1 = 11$ ,  $u_2 = 80$ ,  $u_3 = 200$ ,  $u_4 = 100$  and  $u_5 = 8$ , find the value of  $\nabla^5 u_5$ .
- i)by using the difference table
- ii) without using the difference table
- 5. Compute the third difference of f(32) by a formula from the following table.

33 34  $\mathbf{x}$  : 32 35

f(x): 539 8568 8765 24364

Verify the result by means of the difference table.

- 6. Find the missing value in the following table i) by using the difference table
- ii). without using the difference table

**X**: 2 4 6 8 10

Y: 5.6 8.6 13.9 \_ 35.6

7. The following table gives the population of a town during the last six censuses. Estimate the population increase during the period 1946 to 1976.

1991 Year 1941 1951 1961 1971 1981 20 24 29 36 51 **Population** 46

(in Lakhs)

8. Find the values of y at x=21 and x=28 from the following data.

X: 20 23 29 26

Y: 0.3420 0.3907 0.4384 0.4848

9. From the following data, find  $\theta$  at x=43 and x=84

X: 40 50 60 70 80 90

Y: 184 204 226 250 276 304

10. Use Lagrange's interpolation, calculate the profit in the year 2000 from the following data

Year 1997 2002 1999 2001



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#### (An Autonomous Institution)

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Profit in lakhs of RS : 43 65 159 248

11. Find the third degree polynomial of f(x) satisfying the following data

X: 1 3 5 7

Y : 24 120 336 720

12. Find the polynomial f(x) by using Lagrange's formula and hence find f(3) for

X : 0 1 2 5

f(x) : 2 3 12 147

13. Using Lagrange's interpolation formula find y(10) given that y(5)=12,y(6)=13,y(9)=14,y(11)=16

14. Obtain the root of f(x) = 0 by Lagrange's inverse interpolation given that f(30) = -30,

f(34) = -3, f(38) = 3, f(42) = 18.

15. Find the missing term in the following table using Lagrange's interpolation

X:0 1 2 3 4

Y: 1 3 9 - 81

16.Using Newton's divided difference formula, find u(3)given u(1) = -26, u(2) = 12, u(4) = 256, u(6) = 844.

17. Find f(x) as a polynomial in x for the following data by newton's divided difference formula:

X : -4 -1 0 2 5

f(x): 1245 33 5 9 1335

18. Find f(8) by newton's divided difference formulae for the data:

X: 4 5 7 10 11 13

f(x): 48 100 294 900 1210 2028