

BACHELOR OF COMPUTER APPLICATION
THIRD SEMESTER
COMPUTER ORIENTED NUMERICAL METHODS
BCA-304 (REPEAT)
(USE OMR FOR OBJECTIVE PART)

SET
A

Duration: 1.30 hrs.

Full Marks: 35

Time: 15 min.

(Objective)

Marks: 10

Choose the correct answer from the following:

1X10=10

1. $E\nabla = \nabla E = \dots$
 - a. ∇
 - b. Δ
 - c. a or b
 - d. a and b
2. Which of the following relation is true ?
 - a. $E - 1 = 1 + \Delta$
 - b. $E = 1 + \nabla$
 - c. $E = 1 + \Delta$
 - d. $E = 1 - \Delta$
3. If the data is equally spaced and interpolation is near the beginning of the data then _____ interpolation formula is used.
 - a. Newton's backward difference
 - b. Newton's divided difference
 - c. Lagrange's
 - d. Newton's forward difference
4. $E^{-2} f(x+h) =$ _____
 - a. $f(x+2h)$
 - b. $f(x-2h)$
 - c. $f(x-h)$
 - d. $f(x+h)$
5. $(\Delta\nabla) f(x) =$ _____
 - a. $(\Delta - \nabla) f(x)$
 - b. $(\Delta + \nabla) f(x)$
 - c. $\Delta f(x)$
 - d. $\nabla f(x)$
6. If the data is equally spaced and interpolation is near the end of the data then _____ interpolation formula is used.
 - a. Newton's Forward Difference
 - b. Newton's backward Difference
 - c. Newton's Divided Difference
 - d. Lagrange
7. The process of finding the values inside the interval (X_0, X_n) is called
 - a. Interpolation
 - b. Extrapolation
 - c. Polynomial Equation
 - d. Iteration

8. The Delta of power two is called the _____ order difference operator
- a. First
 - b. Second
 - c. Third
 - d. Fourth
9. The relationship between E and Δ is _____
- a. $E = 1 - \Delta$
 - b. $E = 1 + \Delta$
 - c. $E = \Delta - 1$
 - d. $E = \Delta$
10. What is the value of $E^{-1} =$
- a. Δ
 - b. $1 + \Delta$
 - c. ∇
 - d. $1 - \nabla$

(Descriptive)

Time : 1 hrs. 15 min.

Marks : 25

[Answer question no.1 & any two (2) from the rest]

1. Prove that $\Delta \nabla = (E^{\frac{1}{2}} - E^{-\frac{1}{2}})^2 = \Delta - \nabla$

5

2. A. Find the missing terms from the following data

5 + 5 = 10

x	1	2	3	4	5
y	3	?	19	?	51

B. Evaluate $\Delta \tan^{-1} x$

3. A. Find the number of persons getting wages between Rs 30 and Rs 35 from the following data

7 + 3 = 10

Wages in Rs.	0-10	10-20	20-30	30-40
No. of persons	9	30	35	42

B. Find a polynomial of x

x	1	2	3	4	5
f(x)	1	-1	1	-1	1

4. State Newton Gregory's Forward interpolation formula.
From the following data, express y as a function of x

3 + 7 = 10

x	0	2	4	6
y	8	11	20	41

5. State the Newton Divided Difference formula.

$$2 + 8 = 10$$

Apply newton divided difference formula to find the third degree polynomial of f(x)

x	0	1	2	5
f(x)	2	3	12	147

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