

Exam. Code : 107202
Subject Code : 1706

Bachelor of Computer Application (BCA) 2nd Semester
NUMERICAL METHODS AND STATISTICAL
TECHNIQUES
Paper—III

Time Allowed—2 Hours] [Maximum Marks—75

Note :—There are **EIGHT** questions of equal marks.
Candidates are required to attempt any **FOUR**
questions.

1. (a) If $U = \frac{4x^2y^3}{z^4}$ and errors in x, y, z be 0.001. Find relative error when $x = y = z = 1$.
(b) Find a real root of equation $x^3 - 2x - 5 = 0$ correct to three decimal places using bisection method.
2. (a) Using false position method find real root of equation $x^3 - 4x - 9 = 0$ correct to three decimal places.
(b) Find iterative formula for \sqrt{N} then evaluate $\sqrt{28}$ using Newton-Raphson method correct to three decimal places.

3. (a) Prepare a divided difference table for following data :

x	5	7	11	13	17
y	150	392	1452	2366	5202

- (b) Evaluate $\int_0^2 \frac{dx}{1+x^2}$ using Trapezoidal rule.

4. (a) Using Newton forward difference formula, find

$$\frac{dy}{dx} \text{ at } x = 7.50$$

x	7.47	7.48	7.49	7.50	7.51	7.52	7.53
y	0.193	0.195	0.198	0.201	0.203	0.206	0.208

- (b) Evaluate $\int_0^3 \frac{dx}{x}$ using Simpson's $\frac{1}{3}$ rule.

5. (a) Find missing frequency if mean = 33.

x	10	12	60	70	40
y	5	10	?	2	5

- (b) Find standard deviation :

x	5	10	15	20	25
y	3	12	18	10	7

6. (a) Find correlation co-efficient :

x	50	60	55	65	75	70	75	80	90	80
y	10	14	15	11	12	15	16	20	18	19

- (b) Find mean deviation from mean :

x	25	15	55	45	35	75	65
y	3	8	15	18	3	2	1

7. (a) Using method of least square fit curve of type $y = ax + bx^2$.

x	1	2	3	4	5
y	1.8	5.1	8.9	14.1	19.8

- (b) Fit a curve of form $y = ae^{bx}$ to following data :

x	0	1	2	3
y	1.05	2.10	3.85	8.30

8. (a) Fit a curve $y = ax + \frac{b}{x}$ to following data :

x	1	2	3	4	5	6	7	8
y	5.4	6.3	8.2	10.3	12.6	14.9	17.3	19.5

- (b) Fit a straight line :

x	1	2	3	4	5
y	14	27	40	55	68