

Exam. Code : 107202

Subject Code : 2045

BCA 2<sup>nd</sup> SemesterNUMERICAL METHODS AND STATISTICAL  
TECHNIQUES

## Paper—III

Time Allowed—Three Hours] [Maximum Marks—75

**Note** :— (1) Candidates are required to attempt *five* questions.

(2) All questions carry equal marks.

1. (a) Discuss the various types of errors that occur while performing numerical computations.
- (b) Describe the terms kurtosis, skewness, coefficient of variance, moments.
2. (a) Fit a Lagrange polynomial to the data :

x	1	2	3	5
y	0	1	26	124

And hence find y when  $x = 3.5$ .

- (b) What are Forward Difference and Backward Difference Interpolation Methods ?

3. Find the mean deviation and standard deviation of the following data :

No. of Colds Experienced	No. of Persons
0	15
1	46
2	91
3	162
4	110
5	95
6	85
7	26
8	13
9	2

4. (a) What are the errors in Trapezoidal and Simpson's rule of numerical integration ?
- (b) The average salary of male employees in a firm was Rs. 520 and that of female was Rs. 420. The mean salary of all employees was Rs. 500. Obtain the percentage of male and female employees.

5. Using Newton's divided difference formula find  $f(3)$ , given :

<b>x</b>	0	1	2	4	5
<b>f(x)</b>	1	14	15	5	6

6. (a) Discuss the difference between mean, median and mode.  
(b) Explain Least Square Fit Linear and Non-Linear trend.
7. (a) Explain the methods of bi-section.

(b) Evaluate  $\int_0^1 \int_0^1 \frac{1}{1+x+y}$  by Trapezoidal rule.

8. Given :  $y'' + xy' + y = 0$ ,  $y(0) = 1$ ,  $y'(0) = 0$ , find the value of  $y(0.1)$  by Runge-Kutta's method of fourth order.