UNIT–IV

8. (a) Find out Karl Pearson's Correlation Coefficient between age and playing habit of the following students : 8

Age (in yrs) :	15	16	17	18	19	20
No. of Students:	250	200	150	120	100	80
Regular Players :	200	150	100	48	30	12

(b) $4x - 2y = 3$ and $2x - 3y = 5$ are two lines of Regression. Find. 8

(i) Mean $\bar{x}$ and $\bar{y}$

(ii) Regression coff. b_{xy} and b_{yx}.

(iii) Correlation Coefficient between x any y.

9. (a) In a hospital 480 female babies and 520 male babies were born in a week. Do these figures confirm that males and females are bron in equal number. 8

(b) Find best fit value of p and q in $y = p + qx$: 8

x :	1	2	3	4	5	6	7
y :	9	8	10	12	11	13	14

Roll No. ..... Total Pages : 4

OBCA/M-15 **19003**

COMPUTER ORIENTED NUMERICAL AND STATISTICAL METHODS

Paper–BCA-103

Time Allowed : 3 Hours] [Maximum Marks : 80

Note : Attempt **five** questions in all, selecting at least **one** question from each Unit. Question No. **1** is compulsory. All questions carry equal marks.

Compulsory Question

1. (a) What do you mean by Normalized floating point representation? 3

(b) What do you mean by term Iteration method? List out various iterative methods. Which is better method and why? 3

(c) Show that sum of deviations about Arithmetic Mean in zero. 3

(d) Determine the Binomial distribution for which the mean is 4 and variance 3 and find its mode. 3

(e) Find the value of Chi-square for the following table : 4

Class	A	B	C	D	E
Observed frequency	8	29	44	15	4
Expected frequency :	7	24	38	24	7

UNIT–I

2. (a) Using Bisection method, find roots of the equation $x^3 - x^2 - x - 3 = 0$. Correct to three decimal places. 8

   (b) Using Newton-Raphson formula, find roots of the equation $x^2 - 3x + 2 = 0$. 8

3. (a) Using Gauss-Seidal method, find the solution :

$$10x + y + z = 6$$

$$x + 10y + z = 6$$

$$x + y + 10z = 6.$$ 8

   (b) Solve $\frac{dy}{dx} = x + y$ using Taylor's series method. Take $x = 1$, $y = 0$ and upto $x = 1.2$ with $h = 0.1$. 8

UNIT–II

4. (a) Prove that the Chebyshev polynomials are orthogonal w.r.t. the function $\frac{1}{\sqrt{1-x^2}}$. 8

   (b) The function f(x) for x values are given as $f(1) = 4$, $f(2) = 5$, $f(7) = 5$, $f(8) = 4$. Find f(6). And find value of x for which f(x) is maximum or minimum. 8

5. (a) Find the first and second derivatives of $y = f(x)$ at $x = 1.1$ for given data : 8

x	1	1.2	1.4	1.6	1.8	2.00
f(x)	0.00	0.1280	0.5440	1.2960	2.4320	4.00

   (b) Evaluate $\int_0^{0.6} e^x \, dx$ taking 7 ordinates by applying trapezoidal rule upto 3 decimal places. 8

UNIT–III

6. (a) The first of the two samples has 100 items, with mean 15 and variance 9. If the whole group has 250 items with mean 156 and variance 13.44, find the variance of second group. 8

   (b) Find the four central moments for the following distribution : 8

Wages	0-10	10-20	20-30	30-40
No of Person:	1	3	4	2

7. (a) If the probability that a man aged 60 will live to be 70 is 0.5, what is the probability that out of 10 men now aged 60, atleast 7 will live to be 70? 8

   (b) What are the characteristics of Normal Distribution? 8