

## FINAL YEAR B.Sc. DEGREE EXAMINATION, MARCH/APRIL 2005

## Part III—Group (vvi)—Statistics (Main)

## Paper VII—PRACTICAL—I

## (Topics Covered in Paper I and II)

Time : Three Hours

Maximum : 55 Marks

*Each question carries 11 marks.*

1. Construct a Lorenz curve for the following data :—

No. of persons	:	15	12	6	5	2
Wealth in Rs. 000's	:	78	100	70	80	22

2. Fit a parabola
- $Y = a + bX + cX^2$
- by the method of least squares to the following data :—

X	:	1	2	3	4	5	6	7
Y	:	2.3	5.2	9.7	16.5	29.4	35.5	54.4

3. A computer while calculating the correlation coefficient between two variables X and Y from 25 pairs of observations obtained the following results :—

$$n = 25, \Sigma X = 125, \Sigma Y = 100, \Sigma X^2 = 650, \Sigma Y^2 = 460 \text{ and } \Sigma XY = 508.$$

It was, however, discovered at the time of chekcing that two pairs of observations were not correctly copied. They were taken as (6, 14) and (8, 6) while the correct values were (8, 12) and (6, 8). Prove that the correct value of the correlation coefficient is  $2/3$ .

4. The following is the data on height (X in cm.) and tuber weight (Y in kg.) of 100 tapioca plants. Determine the correlation coefficient between X and Y :—

Y \ X	40 - 44	44 - 48	48 - 52	52 - 56	56 - 60
2 - 4	-	2	5	3	-
4 - 6	3	4	6	8	2
6 - 8	4	6	14	17	6
8 - 10	-	5	8	4	3

5. (a) Find the missing value of
- $f(x)$
- given :

x	:	0	2	4	6
f(x)	:	1	9	-	97

- (b) If:

x	:	0	4	8	12
f(x)	:	143	158	177	199

find  $f(5)$  using Bessel's formula.

6. Find by Weddl's rule the value of the integral
- $\int_4^{5.2} \log_e x dx$
- .

7. Fit a Poisson distribution to the following data and calculate the theoretical frequencies :—

Deaths	:	0	1	2	3	4
Frequency	:	122	60	15	2	1

8. Applying Lagrange's formula find  $f(x)$  at  $x = 5$  using the following data :—

$x$	:	2	3	4	6	8
$f(x)$	:	18	22	29	35	42

9. Compute Fisher's Ideal Index Number for the following data and show that it satisfies time reversal test and factor reversal test :—

Commodity	Base Year		Current Year	
	Price	Quantity	Price	Quantity
A	6	50	10	56
B	2	100	2	120
C	4	60	6	60
D	10	30	12	24
E	8	40	12	36

10. Compute the trend values by finding 4-yearly moving averages for the following time series. Also plot the observed values and the trend values :—

Year	:	1988	1989	1990	1991	1992	1993	1994	1995	1996
Value	:	103	104	107	101	102	104	105	99	100