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3 (Sem-1) STS M Pr

2017

**STATISTICS**

(Major Practical)

Paper : 1·3

Full Marks – 50

Time – Three hours

**GROUP – A**

Answer any *three* questions.

Each question carries 10 marks.

1. The distribution of marks scored by boys and girls in a class test (of maximum marks 50) is given below :

Class Interval	Marks Scored	
	Boys	Girls
0 – 10	0	2
10 – 20	6	2
20 – 30	4	4
30 – 40	6	6
40 – 50	4	6

Draw two box plots and compare the performance of boys and girls.

[Turn over

2. The moment coefficients of a frequency distribution based on 100 observations were calculated as follows :

$$\text{mean} = 9.36756$$

$$\text{variance} = 19.35396$$

$$\beta_1 = 0.73474 \text{ (}\mu_3 \text{ positive)}$$

$$\beta_2 = 4.05433$$

Later it was discovered that an observation 2.9 was misread as 9.2. Calculate the above moments correctly.

3. In a study of a random sample of 120 students, the following results are obtained :

$$\bar{X}_1 = 68 \qquad \bar{X}_2 = 70 \qquad \bar{X}_3 = 74$$

$$\text{Var}(X_1) = 100 \quad \text{Var}(X_2) = 25 \quad \text{Var}(X_3) = 81$$

$$r_{12} = 0.60 \qquad r_{13} = 0.70 \qquad r_{23} = 0.65$$

Where  $X_1$ ,  $X_2$ ,  $X_3$  denote percentage of marks obtained by a student in test-I, test-II and the final examination respectively.

- (i) Obtain the least square regression equation of  $X_1$  on  $X_2$  and  $X_3$ .
- (ii) Compute  $r_{12.3}$  and  $R_{1.23}$ .

4. For 50 married couples the ages (in years) of wife X and husband Y are grouped in the following table with class intervals for 10 years for each, the frequencies for the different classes being shown in the table. The values of X and Y are the mid values in the classes :

Y \ X	20	30	40	50	60	70	Total
20	1						1
30	2	11	1	0			14
40		4	10	1			15
50			3	6	1		10
60				2	3	2	7
70					1	2	3
Total	3	15	14	9	5	4	50

Compute :

- (i)  $P(Y/X = 40)$
- (ii)  $E(X/Y = 50)$
- (iii)  $E(Y)$
- (iv)  $\text{Var}(Y/X = 50)$

## GROUP – B

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|-------------------------|----|
| 5. Practical Notebook.  | 5  |
| 6. Viva voce.           | 5  |
| 7. Internal Assessment. | 10 |