

1605502246704-4  
Code No. SHIISTA

Faculty of Science

B.Sc. (Statistics) II Year, CBCS - III Semester Examinations, Dec 2017

Paper-III (Statistical Methods)

Time: 3 hours

Max Marks: 80

(b) Define F-distribution and explain the inter relation between  $\chi^2$  and F-distribution.

12.(a) i) Explain the maximum likelihood method of estimation and explain its properties, stating the assumptions.

(5x4=20 Marks)

(OR)

(b) Explain the criteria of a Good Estimator.

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Section-A

1. Answer any Five of the following questions.
1. Define Correlation. Explain its nature.
2. Show that  $-1 \leq r \leq +1$
3. Explain the consistency conditions for the three attributes.
4. Fit a power curve of the type  $y = ax^b$   $\forall i = 1, 2, \dots, n$
5. Define  $\chi^2$ -distribution and explain its properties.
6. Define Standard error and find the standard error of two sample proportions.
7. State Neymann's Factorization theorem.
8. Find the moment estimator for the parameter  $\lambda$  in Poisson distribution.

Section-B

(4x15=60 Marks)

II. Answer all the following questions.

9. (a) Define Rank correlation and show that

$$\rho = \frac{1 - 6 \sum_{i=1}^n d_i^2}{n(n^2 - 1)}$$

(OR)

(b) If the two Regression lines are  $4x - 5y + 30 = 0$ ,  $20x - 9y - 107 = 0$  Identify the line of Regression  $x$  on  $y$  and  $y$  on  $x$ . Find  $r_{xy}$  and  $\sigma_y$  when  $\sigma_x = 3$

10. (a) Define consistency and examine the consistency of the following data.

$$N=100, (A)=60, (B)=42, (C)=50$$

$$(ABC)=10 \quad (A \cap B) = 13, \quad (A \cap C) = 12$$

(OR)

(b) Define an association and show that

$$Q = \frac{2y}{1+y^2}$$

11. (a) Define the following terms with examples.

1. Population 2. Sample 3. Statistic 4. Parameter
5. Sampling distribution 6. Standard error.

(OR)