

Roll No. _____

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SVS 334 B-2K13
B.Sc. Vth Semester Degree Examination
Mathematical Statistics
(Theory of Estimation and C Language)
Paper - V

Time : 3 Hours

Maximum Marks : 80

Instructions to Candidates:

Statistical tables and graph will be supplied on request.

I. Answer all the questions.

(15×1=15)

- 1) The theory of estimation was founded by
 - a) Spearman
 - b) Karl pearson
 - c) Cramer Rao
 - d) R.A. fisher.
- 2) Population constants are called
 - a) parameters
 - b) statistics
 - c) degrees of freedom
 - d) none of these
- 3) If $E(\hat{\theta}) \neq \theta$ then $\hat{\theta}$ is called
 - a) unbiased estimator
 - b) positively biased estimator
 - c) negatively biased estimator
 - d) biased estimator.
- 4) In a class of consistent estimators of a parameter θ the estimator whose sampling variance is less than that of any such estimator is called
 - a) consistent estimator
 - b) unbiased estimator
 - c) minimum variance unbiased estimator
 - d) none of these.
- 5) In confidence interval, $(1-\alpha)$ is called as
 - a) Interval estimation
 - b) confidence coefficient
 - c) point estimation
 - d) confidence limits.

- 6) The variance of MLE is given by
- a) $\frac{1}{I(\theta)}$ b) $\frac{I(\theta)}{\sigma}$
- c) $I(\theta)$ d) $\frac{\mu}{I(\theta)}$
- 7) The method of moments was discovered by
- a) Spearman b) Karl pearson
- c) Cramer Rao d) R.A.fisher.
- 8) While adding 'B' and 'B CPL' and developed a language is called
- a) Basic b) Fortran
- c) C-language d) Cobal.
- 9) Parallelogram is used to indicate.
- a) Input b) Output
- c) both a & b d) none of these.
- 10) In C language which 'backslash' constant is used?
- a) '\a' b) '\f'
- c) '\\ ' d) '\t'
- 11) $f = ma$ can be expressed in C as
- a) $f = m \times a$ b) $f = m$ and a
- c) $f = m * a$ d) none of these.
- 12) Which is not a valid variable in C?
- a) marks b) 5ab
- c) num[10] d) gross-salary.
- 13) is the number of reserved words in 'C'
- 14) is a graphical function used in 'C'
- 15) 95% confidence limits for ' μ ' are

II. Answer any five questions.

(5×5=25)

16) Define efficiency and sufficiency.

17) If x_1, x_2, \dots, x_n is random sample from normal population $N(\mu, 1)$, show that

$$t = \sum_{i=1}^n \left(\frac{x_i^2}{n} \right) \text{ is an unbiased estimator of } (\mu + 1).$$

- 18) Mention the properties of M.L.E.
- 19) Obtain the M.V.U.E. of ' μ ' in the normal population $N(\mu, \sigma^2)$ where σ^2 is known
- 20) Find 99% confidence interval for difference between means of large samples.
- 21) Define variable what are the rules used to form a variable in C-language?
- 22) Convert the following mathematical expressions into 'C' expression.

a) $3xyz$

b) $\frac{m+n}{2}$

c) $\sqrt{\alpha+\beta+\gamma}$

d) $2x^4+9x+5$

e) x^n

III. Answer any **four** questions.

(4×10=40)

- 23) Explain the method of maximum likelihood for estimation of parameter.
- 24) Find MLE for parameter λ of a Poisson distribution and also obtain its sampling variance.
- 25) Let x_1, x_2, \dots, x_n be the random sample from a Bernoulli distribution with values 1 and 0 with probabilities θ and $1-\theta$ show that $\frac{T(T-1)}{n(n-1)}$ is an unbiased estimator of θ^2 , where T is given by $T = \sum_{i=1}^n x_i$.
- 26) Explain confidence interval. Also describe construction of confidence interval for a proportion.
- 27) Give different form of control statements in 'C'. Explain Do-while statement.
- 28) Write flow chart and C-program to find median for ungrouped data.