STA301 August 2021 Quiz File

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1) β is the probability of

Select the correct option

A) Reject HO/HO is true

B) Reject HO/HO is false

C) Accept HO/HO is false (Correct)

D) Accept HO/HO is true

2) An estimator is said to be efficient if it has

Select the correct option

A) Smallest Variance

B) Unbiased estimate

C) Both (A) & (B) (Correct)

D) None of these

3) Conventionally, the probability of making a type-I error is denoted by which of the following symbol?

Select the correct option

A) s (sigma)

B) β (beta)

C) 0 (theta)

D) α(alpha) (Correct)

4) The end points that bound the confidence interval are called

Select the correct option

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A) Lower limits

B) Bounded its

C) Lower and upper limits (Correct)

D) Upper limits

5) An estimator is said _____ to be is expected value is equal to true value of its parameter.

Select the correct option

A) Efficient

B) Consistant

C) Based

D) Unbiased (Correct)

6) The width of the confidence interval is called _____ of the estimate.

Select the correct option

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A) Biased

B) Accuracy

C) Precision (Correct)

D) Unbiasedness

7) If we draw a sample of size 'n' from a population then sample is called "large sample" if.

Select the correct option

A) n>40

B) n>30 (Correct)

C) n>50

D) n>25

8) The method of Maximum Likelihood (ML) is used to find out

Select the correct option

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A) Sample values

B) Random numbers

C) Correlation coefficient

D) Point estimates (Correct)

9) The precision of an estimator can be increased by increasing the

Select the correct option

A) Size of sample (Correct)

B) Number of estimators

C) Size of population

D) Number of parameters

10) Which of the following is most important and most widely used method in point estimation?

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Select the correct option

A) The method of moments

B) The method of fractional moments

C) The method of maximum likelihood (Correct)

D) The method of least square

(repeat right 14)

11) Sample Proportion is a/an _____ estimator of population mean.

Select the correct option

A) None of these

B) Unbiased and consistent estimator

C) Unbiased (Correct)

D) Consistent

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12) In a random sample of 500 men from Lahore city, 300 are found to be smokers; the proportion of smokers is equal to:

Select the correct option

A) 0.6 (Correct)

B) 0.3

C) 0.5

D) 0.4

13) An experiment was conducted to estimate the mean yield of a new variety of wheat. A sample of 20 plots gave a mean yield of 2.9, and a 95% confidence interval of (2.48, 3.32). This means:

Select the correct option

A) None of these

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B) We are sure the true mean yield of this new variety is between 2.48 and 3.32.

C) We are 95% confident that the true mean yield of this variety is 2.9

D) We are 95% confident that the true mean yield of this variety is between 2.48 and 3.32 **(D is Correct)**

14) A_____ is a range of numbers inferred from the sample that has a certain probability of including the population parameter over the long run.

Select the correct option

A) Hypothesis (Correct)

B) Lower limit

C) Confidence interval

D) Probability limit

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15) To determine a sample size which test we use _____

Select the correct option

A) t

B) F

C) None of these (Correct)

D) z

16) A statistic whose standard error decreases with an increase in the sample size will be .....

Select the correct option

A) Consistant (Correct)

B) Unbiased

C) Efficient

D) None

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17) A deserving player was not selected in the cricket team. It is an example of:

Select the correct option

A) Type-Ill error

B) Type-I error (Correct)

C) Type-IV error

D) Type-II error

18) In a Geometric distribution, Maximum Likelihood Estimator (MLE) for proportion (P) is equal to:

Select the correct option

A) Sample variance

B) Reciprocal of the mean (Correct)

C) Reciprocal of the sample variance

D) Sample mean

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19) The precision of an estimator can be increased by decreasing the

Select the correct option

A) Level of significance (Correct)

B) Number of estimators

C) Number of parameters

D) Size of sample

20) Conventionally, the probability of making a type-II error is denoted by:

Select the correct option

A) β (beta) (Correct)

B) 0(theta)

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C) α (alpha)

D) 6 (sigma)

21) Sample mean is a/an estimate of population mean.

Select the correct option

A) Biased

B) None of the above

C) Unbiased (Correct)

D) Either unbiased or biased

22) How can we interpret the 90% confidence interval or the mean of the normal population.

Select the correct option

A) There are 100% chances of falling true value of the parameter

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B) There are 90% chances of falling true value of the parameter (Correct)

C) All are correct

D) There are 10% chances of falling true value of the parameter

23) In testing HO: μ = 100 against Hl: μ≤100 at the 10% level of significance, HO is rejected if:

Select the correct option

A) The p-value is greater than 010

B) The p-value is less than 0.10

C) 100 is contained in the 90% confidence interval

D) The value of the test statistics in the acceptance region(Correct)

24) In the method of moments, how many equations are required for finding two unknowns

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Select the correct option

A) 2 (Correct)

B) 4

C) 1

D) 3

25) To determine a sample size in estimating population mean, we use the _____ value.

Select the correct option

A)X

B)Z

C)F

D)t (Correct)

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26) The method of Maximum Likelihood (ML) is used to find out:

Select the correct option

A) Random numbers

B) Sample values

C) Point estimates (Correct)

D) Correlation coefficient

27) Alpha 'α' is the probability of

Select the correct option

A) Making Type 1 error (Correct)

B) Accepting Ho when it is true

C)Rejecting HI when it is wrong

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D)Making Type II error

28) In interval estimation we obtained a ...of values as an estimate of parameter.

Select the correct option

A) Both a and D

B) Range (Correct)

C)Group

D)None of these

29) We can apply method of Maximum Likelihood on:

Select the correct option

A) Qualitative variables only

B) Discrete variables only

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C) Discrete as well as continuous variables (Correct)

D) Continuous variables only

30) Inferential statistics involves:

select the correct option

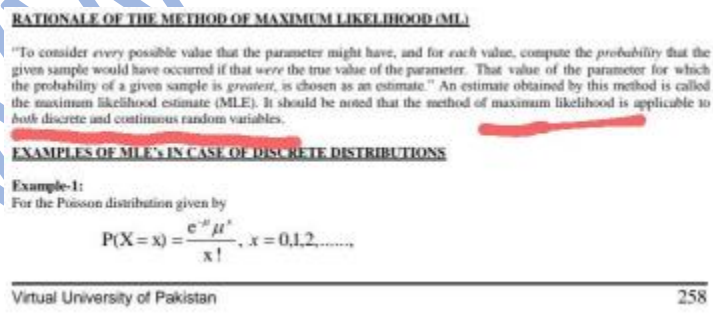
A) Testing of hypothesis

B) All of these (Correct)

C) Confidence interval

D) Estimation

Reference:



RATIONALE OF THE METHOD OF MAXIMUM LIKELIHOOD (ML)

"To consider *every* possible value that the parameter might have, and for *each* value, compute the *probability* that the given sample would have occurred if that *were* the true value of the parameter. That value of the parameter for which the probability of a given sample is *greatest*, is chosen as an estimate." An estimate obtained by this method is called the maximum likelihood estimate (MLE). It should be noted that the method of maximum likelihood is applicable to *both* discrete and continuous random variables.

EXAMPLES OF MLE's IN CASE OF DISCRETE DISTRIBUTIONS

Example-1:
For the Poisson distribution given by

$$P(X = x) = \frac{e^{-\mu}\mu^{x}}{x!}, \quad x = 0,1,2,\ldots\ldots,$$

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31) Ideally, the width of confidence interval should be

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select the correct option

A) 98 (Correct)

B) 1

C) 100

D) 0

32) IF Var(TI) >Var(T2) ,where TI and T2 are two unbiased estimators ,then:

select the correct option

A) T1 is more consistent

B) T2 is more consistent

C) T1 is more efficient

D) T2 is more efficient (Correct)

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33) The confidence intervals become wide and less precise by

select the correct option

A) None of these

B) increasing the sample size

C) decreasing the level of significance

D) decreasing the sample size (Correct)

Reference:

by increasing the sample size, the confidence interval become more precise.

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34) From which of the following methods we can obtain point estimate of the population parameters.

select the correct option

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A) All of the above (Correct)

B) Maximum Liklihood Method

C) Method of Moments

D) Method of Least Squares

35) A confidence interval has a specified probability _____ of containing the true value of the parameter.

Select the correct option

A) 1-α (Correct)

B) α/2

C) α

D) 1+α

36) _____are equivalent.

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Select the correct option

A) Type-II error and Level of confidence

B) Type-I error and Level of significance (Correct)

C) Type-II error and Level of significance

D) Type-I error and Level of confidence

37) The Maximum Likelihood Estimators (MLE) are ..... and ..... but not necessarily

Select the correct option

A) Consistent, efficient, unbiased (Correct)

B) Consistent, unbiased, efficient

C) Unbiased, efficient, consistent

D) Unbiased, consistent, efficient

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38) Interval estimation and Confidence interval are :

Select the correct option

A) Different

B) Independent

C) Dependent

D) Same (Correct)

39) "A failed student was passed by the examiner", is an example of:

Select the correct option

A) Type-I error

B) Type-IV error

C) Type-III error

D) Type-II error (Correct)

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40) When sample size is to be considered large, population standard deviation can be replaced by

Select the correct option

A) Sample Variance

B) Sample Mean

C) Population variance

D) Sample Standard Deviation (Correct)

41) Suppose that the workers of factory B believe that the average income of the workers of factory A exceeds their average income null the Hypothesis will be.

Select the correct option

A) MeanA > MeanB

B) MeanA ≥ MeanB

C) MeanA< MeanB

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D) MeanA≤MeanB (Correct)

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42) As sample size goes up, what tends to happen to 95% confidence intervals?

Select the correct option

A) They become more narrow (Correct)

B) They become more precise and narrow

C) They become more precise

D) They become wider

43) An industrial designer wants to determine the average amount of time it takes an adult to assemble an "easy to assemble" toy. A sample of 16 times yielded an average time

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of 19.92 minutes, with a population standard deviation equal to 5.73. assuming normality of assembly times, what is a 95%.

Select the correct option

A) (14.1123, 22.7277)

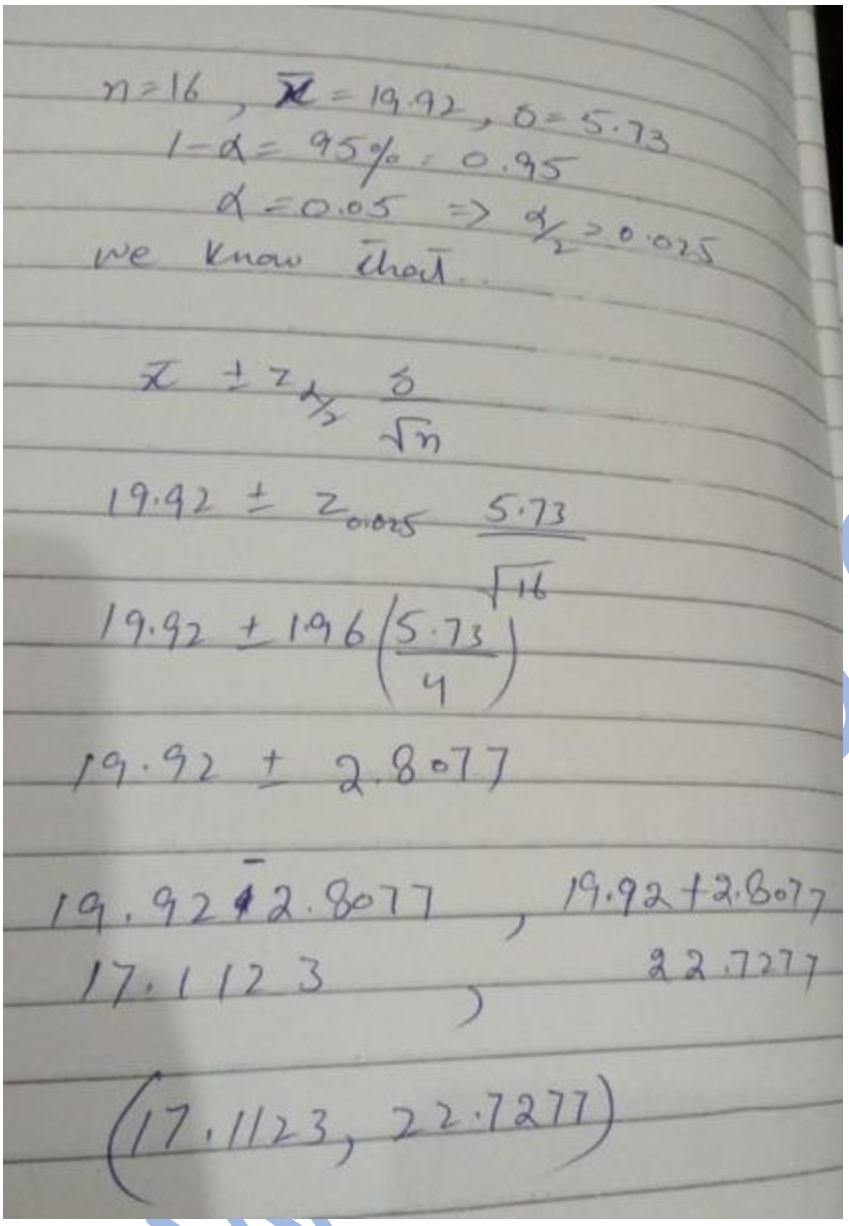
B) (17.1123, 24.7277)

C) (17.1123, 22.7277) (Correct)

D) (17.1123, 30.7277)

Reference:

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44) For a particular hypothesis test, Alpha=0.09 and Beta=0.03. what is the value of Type I error?

Select the correct option

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A) 0.09 (Correct)

B) 0.91

C) 10.03

D) 0.97

45) Pairing is done only in case of ..... observations.

Select the correct option

A) Dependent (Correct)

B) Independent

C) Small

D) Large

46) How can we interpret the 90% confidence interval for the mean of the normal population.

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Select the correct option

A) There are 10% chances of falling true value of the parameter

B) There are 90% chances of falling true value of the parameter (Correct)

C) There are 100% chances falling true value of the parameter

D) All are correct

47) Alpha ‘α’ is the probability of:

Select the correct option

A) Committing Type I error

B) Reject H0/H0 is true

C) Type I error

D) All of these (Correct)

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48) Suppose H0: p=0 H1:p<0 and Critical value is z=-2.33. If calculate the value of Z=-2.60, then what will be your conclusion?

Select the correct option

A) Accept Ho

B) Reject Ho (Correct)

C) Impossible to decide

D) None of the above

49) If a significance level of 5% is used rather than 1%, the null hypothesis is:

Select the correct option

A) Less likely to be rejected

B) Just as likely to be rejected

C) More likely to be rejected (Correct)

D) None of these

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50) If the NULL hypothesis says that the average height of Pakistani soldiers exceeds the average height of American soldiers by not more than 3 inches. What will be its ALTERNATIVE hypothesis?

Select the correct option

A) P>3 (Correct)

B) P<3

C) P-3

D) none of these

51) Suppose HO: u 1<u2 H1 : 1 > u 2 and Critical value is = 1.645 If calculated value of Z = 1.88 then what will be your conclusion?

Select the correct option

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A) Accept Ho

B) Reject Ho (Correct)

C) Impossible to decide

D)None of the above

52) The term 1-B is called

Select the correct option

A) Level of the test

B) Power of the test (Correct)

C) Size of the test

D) Critical region

53) The t-distribution can never become narrower than:

Select the correct option

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A) F-distribution

B) standard normal distribution (Correct)

C) Chi-square distribution

D) exponential distribution

54) When examining group difference where no direction of the difference is specified, which of the following is used?

Select the correct option

A) One-tailed test

B) Two-tailed test (Correct)

C) Directional hypothesis

D) Difference of modes test

55) If we are testing H: mean = 50 against H1: mean < 50 then the rejection region will be

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Select the correct option

A) in the center

B) on left side of mean (Correct)

C) on right side of mean

D) on both sides

56) The level of significance is also called:

Select the correct option

A) Power of test

B) Type II error

C) Type I error (Correct)

D) Acceptance region

57) A random sample of n=25 values gives sample mean 83. Can this sample be regarded as drawn from a normal population with μ = 80 and s=7? In this question the alternative hypothesis will be:

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Select the correct option

A) H1: μ= 80

B) H1: μ ≠ 80 (Correct)

C) H1: μ > 80

D) H1: μ<80

58) The t-test for independent samples assumes which of the following?

Select the correct option

A) Scores are independent (Correct)

B) Scores are dependent

C) Groups have er ca mesas

D) Groups have equal medians

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59) The critical region is computed from the value of:

Select the correct option

A) Alpha (Correct)

B) Beta

C) 1-alpha

D) 1-Beta

60) For a sample p1 = 0.2. n1= 100 and for second sample p2= 0.5 and n2= 200, the pooled estimator pc is:

Select the correct option

A) 0.30

B) 0.45

C) 0.40 (Correct)

D) 0.35

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61) The location of the critical region depends upon:

Select the correct option

A) Null hypothesis

B) Alternative hypothesis (Correct)

C) Value of alpha

D) Value of test-statistic

62) To test the hypothesis about the difference of means for small samples, which test statistic will be used?

Select the correct option

A) Z-test

B) t-test (Correct)

C) F-test

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D) All of these

63) The level of significance is also called:

Select the correct option

A) Power of test

B) Type II error

C) Type I error (Correct)

D) Acceptance region

64) Critical region is computed with the value of....

Select the correct option

A) α (Correct)

B) β

C) 1-α

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D) 1-β

65) Mean of t-distribution will not exist when d.f(degree of freedom) will equal to

Select the correct option

A) 1 (Correct)

B) 2

C) 3

D) 4

66) Which of the following is not a criterion for a good problem situation?

Select the correct option

A) It must be authentic

B) It must be clearly structured and defined. (Correct)

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C) It must be appropriate to the student ..... of development

D) It must be such that its will be benefited by group effort

67) An alternative hypothesis is generally denoted by:

Select the correct option

A) H2
B) H3
C) HO
D) H1 (Correct)

68) When an interval is constructed, what is the probability of occurrence of parameter in it?

Select the correct option

A) 1
B) 50
C) Either 1 or 0 (Correct)
D) 0

69) If an estimator is more efficient then the other estimator, its shape of the sampling distribution will be

Select the correct option

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A) Normal
B) Skewed to right
C) Highly peaked (Correct) (NOT SURE)
D) Flattered

70) In a Poisson distribution, Maximum Likelihood Estimator (MLE) for meu (u) is equal to:

Select the correct option

A) Reciprocal of the sample variance
B) Sample variance
C) Sample mean (Correct)
D) Reciprocal of the mean

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