

Virtual University

About Us

STA301
Solved Final Term Paper 1

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Year
2017

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

In the Name of Allāh, the Most Gracious, the Most Merciful

Paper Pattern

MCQS 40 each 1 mark
Short 4 each 2 marks
Short 4 each 3 marks
long 4 each 5 marks

Question No : 1 of 52

Marks: 1 (Budgeted Time 1 Min)

When each outcome of a sample space has equal chance to occur as any other, the outcomes are called:

Answer (Please select your correct option)

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☐

Mutually exclusive

☒

Equally likely

☐

Not mutually exclusive

☐

Exhaustive

Made by: Waqar Siddhu

When each outcome of a sample space has equal chance to occur as any other, the outcomes are called:

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Equally likely

☐

Not mutually exclusive

☐

Exhaustive

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Start Time: 0:48 AM

An expected value of a random variable is equal to:

Answer (Please select your correct option)

☐ Variance

☒ Mean

☐ Standard deviation

☐ Covariance

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When $f(x)$ is continuous probability function, then $P(X = 1)$ is:

Answer (Please select your correct option)

☐ 1

☐ ∞

☐ $-\infty$

☒ 0

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The sum of deviations is zero, when deviations are taken from:

Answer (Please select your correct option)

☒ Mean

☐ Median

☐ Mode

☐ H.M

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The distribution function $F(x)$ is equal to

Answer (Please select your correct option)

☐ $P(X = x)$

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☒ $P(X \leq x)$

☐ $P(X \geq x)$

☐ $P(X > x)$

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In a one-way ANOVA:

Answer (Please select your correct option)

☐ The interaction term has $(c - 1)(n - 1)$ degrees of freedom

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☐ An interaction term is given

☐ An interaction effect can be tested

☐ There is no interaction term

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The degrees of freedom for a t-test with sample size 'n' is:

Answer (Please select your correct option)

☒ $n-1$

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☐ $n+1$

☐ $n-2$

☐ $n+2$

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Rumour has reached the Trading Standards Officer that the manufacturer ABC is deliberately underfilling his cartons of orange juice. It is decided that a sample should be taken to check this claim. The stated contents on the carton are 100 ml on the average, then the null hypothesis is:

Answer (Please select your correct option)

☒ $H_0: \mu = 100$

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☐ $H_0: \mu > 100$

☐ $H_0: \mu < 100$

☐ $H_0: \mu \neq 100$

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When c is a constant, then E(c) is:

Answer (Please select your correct option)

☐ 0

☐ 1

☒ c

☐ -c

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The combined distribution of more than two random variables is:

Answer (Please select your correct option)

☐ Univariate distribution

☒ Joint distribution

☐ Marginal distribution

☐ Bivariate distribution

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The test statistic used in analysis of variance procedure follow the :

Answer (Please select your correct option)

☐ χ^2 -distribution.

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☐ T-distribution.

☐ Z-distribution.

☒ F-distribution.

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Start Time: 0:40 AM
In normal distribution $\beta_2 = \dots\dots\dots$

Answer (Please select your correct option)

☐ 1

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☐ 2

☒ 3

☐ 0

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Start Time: 0:40 AM
In normal distribution, the quartile deviation Q.D =

Answer (Please select your correct option)

☐ 0.5σ

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☐ 0.75σ

☐ 0.7979σ

☒ 0.6745σ

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Start Time: 0:48 AM

In a symmetrical distribution, the coefficient of skewness is equal to :

Answer (Please select your correct option)

☐

-1

☐

+1

☒

0

☐

2

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Start Time: 0:40 AM

The average which is defined as the reciprocal of the arithmetic mean of the reciprocals of the values is called :

Answer (Please select your correct option)

☐

Geometric Mean

☒

Harmonic Mean

☐

Mode

☐

Median

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Start Time: 0:40 AM

Which measure of dispersion is used to compare the variation of two data sets?

Answer (Please select your correct option)

☒

Coefficient of variation

☐

Coefficient of comparison

☐

Mean deviation

☐

Standard deviation

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Start Time: 0:48 AM

If $S.D(X) = 5$ then $S.D(\frac{2X+5}{2}) =$ _____

Answer (Please select your correct option)

☐ 5

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☐ 10

☐ 15

☒ 7.5

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Start Time: 0:40 AM
The deviation of a distribution from symmetry is called:

Answer (Please select your correct option)

☐ Kurtosis

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☒ Skewness

☐ Dispersion

☐ Flatness

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Start Time: 0:40 AM
The conditional probability function $f(x|1) =$ _____

Answer (Please select your correct option)

☐ $f(1,1)$

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☐ $f(x,1)$

☒ $\frac{f(x,1)}{h(1)}$

☐ $\frac{f(x,1)}{h(x)}$

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Start Time: 0:48 AM

Which one is the correct formula to find the desired sample size?

Answer (Please select your correct option)

☒
$$n = \left(\frac{Z_{\alpha/2} \sigma}{e} \right)^2$$

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☐
$$n = \left(\frac{Z_{\alpha/2} \sqrt{\sigma}}{e} \right)^2$$

☐
$$n = \left(\frac{Z_{\alpha/2} \bar{X}}{e} \right)^2$$

☐
$$n = \frac{Z_{\alpha/2} \sigma}{e}$$

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A deserving player is not selected in the team is an example of

Answer (Please select your correct option)

☐ Type I error

☒ Type II error

☐ Correct decision

☐ No information regarding this

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A judge can acquit a guilty person is the example of

Answer (Please select your correct option)

☐ Type I error

☐ Type II error

☒ Correct decision

not sure

☐ No information regarding this

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Ideally, the width of confidence interval should be:

Answer (Please select your correct option)

☒ 0

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☐ 1

☐ 99

☐ 100

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Start Time: 0:40 AM
If the sampling distribution of \bar{X} is normal, we would expect 99% of the sample means to be within the interval:

Answer (Please select your correct option)

☐ $\mu_x \pm 2\sigma_x$

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☐ $\mu_x \pm 1.96\sigma_x$

☒ $\mu_x \pm 2.58\sigma_x$

☐ $\mu_x \pm \sigma_x$

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Start Time: 0:40 AM
If mean of χ^2 distribution is k then variance will be:

Answer (Please select your correct option)

☐ k^2

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☒ 2k

☐ 1/k

☐ k

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Start Time: 0:48 AM

Mean of the F-distribution is possible only, when

Answer (Please select your correct option)

☐ $v_1 > 2$

☒ $v_2 > 2$

☐ $v_1 < 2$

☐ $v_2 < 2$

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In Statistics, we have MSE which is abbreviation of

Answer (Please select your correct option)

☒ Mean square error

☐ Measured square error

☐ Medical screening exam

☐ Major sampling error

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What is the graphical shape of the chi-square distribution?

Answer (Please select your correct option)

☒ Positively skewed

☐ Negatively skewed

☐ Uniformly distributed

☐ Normally distributed

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As the degree of freedom increases, the t-distribution tends to coincide with:

Answer (Please select your correct option)

☐ Binomial distribution

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☐ Uniform distribution

☐ Hypergeometric distribution

☒ Normal distribution

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If X and Y are independent variables, then $E(XY)$ is:

Answer (Please select your correct option)

☐ $E(X)E(Y)$

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☒ $E(X)E(Y)$

☐ $X E(Y)$

☐ $Y E(X)$

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What are the number of ways in which four books can be arranged on a shelf?

Answer (Please select your correct option)

☐ 4

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☐ 6

☐ 12

☒ 24

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Start Time: 0:48 AM

The parameters of the binomial distribution $b(x, n, p)$ are:

Answer (Please select your correct option)

☐ $x \text{ \& } n$

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☐ $x \text{ \& } p$

☒ $n \text{ \& } p$

☐ $x, n \text{ \& } p$

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Hypergeometric probability distribution has :

Answer (Please select your correct option)

☐ (n, k) parameter

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☐ (N) parameter

☐ $(N, n, N-k)$ parameter

☒ (N, n, k) parameter

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The variance of the hypergeometric probability distribution is:

Answer (Please select your correct option)

☐ $\sigma^2 = n \frac{k}{N}$

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☒ $\sigma^2 = n \frac{k}{N} \frac{N-k}{N} \frac{N-n}{N-1}$

☐ $\sigma^2 = npq$

☐ $\sigma^2 = N \frac{n}{K}$

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When $f(x)$ is continuous probability function for $1 < X < 5$, then $P(X < 1)$ is:

Answer (Please select your correct option)

☐ 0

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☐ 0.25

☐ 0.5

☐ 1

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Start Time: 0:48 AM

For any two estimators T_1 and T_2 , if $VAR(T_1) < VAR(T_2)$, then T_1 is:

Answer (Please select your correct option)

☐ Unbiased

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☐ Sufficient

☒ Efficient

☐ Consistent

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Start Time: 0:48 AM

If an estimator gets closer to the population parameter by increasing sample size then it is known as:

Answer (Please select your correct option)

☒ Consistent estimator

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☐ Sufficient estimator

☐ Efficient estimator

☐ Unbiased estimator

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Start Time: 0:48 AM

Which of the following comes first to make frequency distribution.

Answer (Please select your correct option)

☐ Number of Groups

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☐ Class interval

☒ Range

☐ Tally marks

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What curve shape would you expect for the distribution of death rates of population of all age groups?

Answer (Please select your correct option)

☐ Symmetrical curve

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☐ Skewed to the right

☐ Skewed to the left

☒ U shape curve

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Which one is the measure of central tendency.

Answer (Please select your correct option)

☐ Variation of the distribution

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☒ Average of the distribution

☐ Scatterness of the distribution

☐ Dispersion of the distribution

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What does quartile deviation measure in a distribution?

Answer ([Please click here to Add Answer](#))

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In a random sample of 1000 women in a locality, 224 women said that they use Aerial washing powder. What is the point estimator and point estimate of the proportion of the women who use Aerial washing powder?

Answer ([Please click here to Add Answer](#))

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Start Time: 9:48 AM 42

42

What is the impact of level of confidence $(1-\alpha)$ on the value of $Z_{\alpha/2}$?

Answer ([Please click here to Add Answer](#))

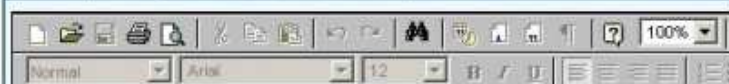
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Formulate the hypothesis in case of goodness of fit test.

Answer ([Please click here to Add Answer](#))



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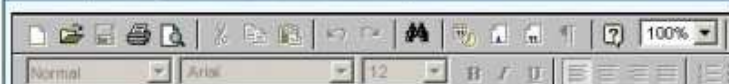
Start Time: 9:48 AM

44

Why the median is suitable average for the below data set? Explain.

Monthly income (in rupees)	No. of workers
Less than 2000/-	100
2000/- to 2999/-	300

Answer ([Please click here to Add Answer](#))



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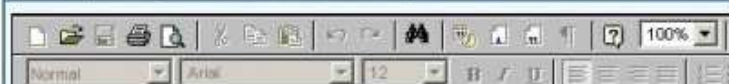
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Start Time: 9:48 AM

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(in rupees)	
Less than 2000/-	100
2000/- to 2999/-	300
3000/- to 3999/-	500
4000/- to 4999/-	250
5000/- and above	50

Answer ([Please click here to Add Answer](#))



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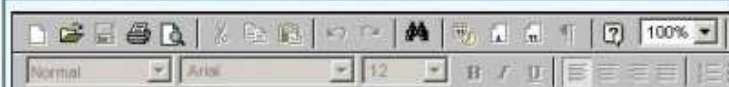
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Start Time: 9:48 AM

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If Z is a standard normal random variable with mean 0 and variance 1, then find the Lower quartile.

Answer ([Please click here to Add Answer](#))



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Start Time: 9:48 AM

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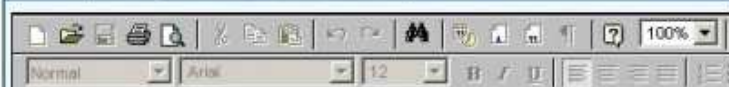
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Write down critical region for the following hypothesis at 5% level of significance.

$$H_0: \mu = 75$$

$$H_1: \mu < 75$$

Answer ([Please click here to Add Answer](#))



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The manager of a bottling plant is anxious to reduce the variability in net weight of fruit bottled. Over a long period, the standard deviation has been 15.2 gm. A new machine is introduced and the net weights (in grams) in 10 randomly selected bottles (all of the same nominal weight) are 987, 966, 955, 977, 981, 967, 975, 980, 953, and 972.

State null and alternative hypothesis that machine has a better performance? Also write down test-statistics about the hypothesis.

Answer ([Please click here to Add Answer](#))



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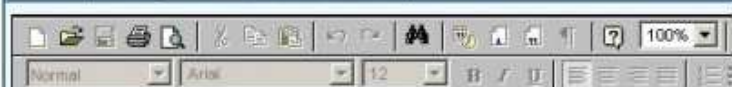
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Find the coefficient of standard deviation from the following data:
Life in Hours (X): 130, 150, 180, 250, 345

Answer ([Please click here to Add Answer](#))



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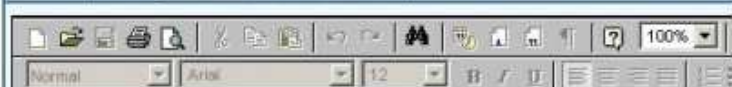
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Start Time: 9:48 AM

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What is the probability that a poker hand of 5 cards contain (i) exactly 2 aces (ii) exactly 1 ace?
(Use hypergeometric distribution)

Answer ([Please click here to Add Answer](#))



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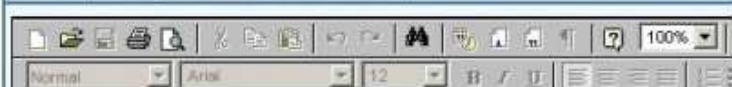
Start Time: 9:48 AM

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If $n=22$, $\sum (d - \bar{d})^2 = 270$, $\bar{d} = 4$

Then, using a 0.05 level of significance level, test the hypothesis $H_0: \mu_d = 0$ against $H_1: \mu_d \neq 0$

Answer ([Please click here to Add Answer](#))



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Start Time: 9:48 AM

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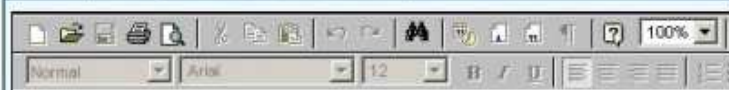
A company launched new layout of its website. After a survey, 62 of 115 visitors liked the new layout while 59 of 135 visitors liked the old layout of the website. Company claims that new layout did not improve the visitor's liking about the website.

By using the critical value $Z < -Z_{0.05} = -1.645$, verify the company's claim:

$$H_0: P_1 - P_2 \geq 0$$

$$H_1: P_1 - P_2 < 0$$

Answer ([Please click here to Add Answer](#))



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