



Virtual University

About Us

STA301
Solved Final Term Paper 4

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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

Var($4X + 5$) = _____

Answer (Please select your correct option)

☐ 16 Var (X)

☐ 16 Var (X) + 5

☒ 4 Var (X) + 5

☐ 12 Var (X)

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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 hyper geometric random variable is a(an):

Answer (Please select your correct option)

☐ Continuous variable

☒ Discrete variable

☐ Undefined

☐ Independent variable

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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

☐ 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)

☒ $H_0: \mu = 100$

☐ $H_0: \mu > 100$

☐ $H_0: \mu < 100$

☐ $H_0: \mu \neq 100$

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Assuming that following is a probability distribution, then what is the value of 'a':

X	1	2	3
P(X)	0.1	a	0.1

Answer (Please select your correct option)

☐ 0.6

☒ 0.8

☐ 0.2

☐ 0.4

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In normal distribution $\beta_1 = \dots\dots\dots$

Answer (Please select your correct option)

☒ 0

☐ 1

☐ 2

☐ 3

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A good way to get a small standard error is to use a _____.

Answer (Please select your correct option)

☐ Repeated sampling

☐ Small sample

☒ Large sample

☐ Large population

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A randomly selected sample of 400 students at university was asked whether or not they will participate in politics. Forty-six percent of the 400 student surveyed answered "yes". Which one of the following statement about number 46% is correct?

Answer (Please select your correct option)

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- ☐ It is a sample statistic.
- ☐ It is a population parameter.
- ☐ It is a margin of error.
- ☒ It is a standard error. **not sure**

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If you draw all possible samples from some population, calculate the mean for each of the sample and construct the probability distribution of the sample means, what would you have?

Answer (Please select your correct option)

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- ☐ A population distribution
- ☒ A sample distribution
- ☒ A sampling distribution
- ☐ A parameter distribution

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The conditional probability function $f(x|1) =$ _____

Answer (Please select your correct option)

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- ☐ $f(1,1)$
- ☐ $f(x,1)$
- ☒ $\frac{f(x,1)}{h(1)}$
- ☐ $\frac{f(x,1)}{h(x)}$

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If $f(x, y)$ is bivariate probability density function of continuous random variables X and Y then marginal density function of y i.e. $h(y)$ is:

Answer (Please select your correct option)

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☐ $\int_{-\infty}^{\infty} f(x, y) dx$

☐ $\int_{-\infty}^{\infty} f(x, y) dy$

☒ $\int_{-\infty}^{\infty} \int_{-\infty}^{\infty} f(x, y) dx dy$

☐ $\int_a^b \int_c^d f(x, y) dy dx$

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

Answer (Please select your correct option)

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☐ Hypothesis

☐ Lower limit

☒ Confidence interval

not sure

☐ Probability limit

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How many parameter(s) are in t-distribution?

Answer (Please select your correct option)

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☐ 0

☒ 1

☐ 2

☐ 3

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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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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)

☐ $\mu_x \pm 2\sigma_x$

☐ $\mu_x \pm 1.96\sigma_x$

☒ $\mu_x \pm 2.58\sigma_x$

☐ $\mu_x \pm \sigma_x$

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The proportion of males in Pakistan is at least 0.48, the alternative hypothesis H_1 is

Answer (Please select your correct option)

☐ $P \leq 0.48$

☐ $P = 0.48$

☒ $P < 0.48$

not sure

☐ $P \geq 0.48$

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If mean of χ^2 distribution is k then variance will be:

Answer (Please select your correct option)

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☐ k^2

☒ 2k

☐ 1/k

☐ k

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Test Statistics χ^2 is equal to:

Answer (Please select your correct option)

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☐ $\frac{n^2 S^2}{\sigma_a^2}$

☒ $\frac{n S^2}{\sigma_a^2}$

☐ $\frac{S^2}{2\sigma_a^2}$

☐ $\frac{n^2 S^2}{2\sigma_a^2}$

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F- distribution is

Answer (Please select your correct option)

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☐ Positively skewed

☐ Negatively skewed

☐ Normal

☐ Symmetrical

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The Chi- Square distribution is continuous distribution ranging from:

Answer (Please select your correct option)

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☐ $-\infty \leq \chi^2 \leq \infty$

☐ $-\infty \leq \chi^2 \leq 1$

☐ $-\infty \leq \chi^2 \leq 0$

☒ $0 \leq \chi^2 \leq \infty$

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In Statistics, we have MSE which is abbreviation of

Answer (Please select your correct option)

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☒ Mean square error

☐ Measured square error

☐ Medical screening exam

☐ Major sampling error

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The LSD test is applied when the null hypothesis is:

Answer (Please select your correct option)

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☒ Rejected

☐ Accepted

☐ Finalized

☐ Acknowledged

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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

☐ Uniform distribution

☐ Hypergeometric distribution

☒ Normal distribution

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In a binomial experiment the total number of trials are:

Answer (Please select your correct option)

☒ Fixed in advance

☐ Changeable according to situation

☐ Unpredictable

☐ Not independent

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What is the probability of drawing a red-queen card from a well shuffled pack of 52 playing cards?

Answer (Please select your correct option)

☐ 4/52

☒ 2/52

☐ 13/52

☐ 26/52

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The probability of drawing a spade card is:

Answer (Please select your correct option)

☐ 1/52

☐ 4/52

☒ 13/52

☐ 26/52

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Which of the following is true for the binomial distribution $b(x, n, p)$:

Answer (Please select your correct option)

☒ mean > variance

☐ mean < variance

☐ mean = variance

☐ mean = standard deviation

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When $f(x)$ is continuous probability function, then $P(X = 2)$ is:

Answer (Please select your correct option)

☐ 1

☐ 0.5

☒ 0

☐ 0.25

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

Answer (Please select your correct option)

☐ Unbiased

☐ Sufficient

☒ Efficient

☐ Consistent

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In construction of a histogram, what would be taken along X -axis?

Answer (Please select your correct option)

☐ Mid points

☐ Class limits

☐ Class interval

☒ Class boundaries

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If you connect the mid-points of rectangles in a histogram by a series of lines that also touches the x -axis from both ends, what will you get?

Answer (Please select your correct option)

☐ Ogive

☐ Frequency polygon

☒ Frequency curve

☐ Histogram

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Tabulation is the process of arranging data into:

Answer (Please select your correct option)

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☐ Different classes

☐ Rows

☐ Columns

☒ Rows and Columns

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Which type of the curve is represented by the following shape?



Answer (Please select your correct option)

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☒ Negatively skewed curve

☐ Bell shape curve

☐ semi-symmetrical curve

☐ Positively skewed curve

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If $A = \{1, 2, 3, 4, 5, 10\}$ and $B = \{1, 3, 5\}$ then $B \subset A$ means:

Answer (Please select your correct option)

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☐ A is less than B

☐ A is contained in B

☒ B is contained in A

☐ B is less than A

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What is the mode in the word STATISTICS.

The Mode is defined as that value which occurs most frequently in a set of data
i.e. it indicates the most common result.

Answer (Please select your correct option)

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☐

S

☐

T

☐

I

☒

S and T

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In a symmetrical distribution, if $Q_1 = 20$, $Q_2 = 30$ then Q_3 is :

Answer (Please select your correct option)

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☐

50

☒

40

☐

30

☐

10

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Which one of the following is not included in measures of central tendency:

Answer (Please select your correct option)

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☒

Quartile Deviation

☐

Harmonic Mean

☐

Geometric Mean

☐

Arithmetic Mean

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The sum of deviations from mean is:

Answer (Please select your correct option)

☐ Maximum

☐ Minimum

☒ Zero

☐ Undefined

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Mean deviation is always:

Answer (Please select your correct option)

☐ Less than Standard Deviation

☐ Greater than Standard Deviation

☐ Greater or equal to Standard Deviation

☒ Less or equal to Standard Deviation

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In how many branches, estimation can be divided? Also write down the names of the branches.

Answer (Please click here to Add Answer)

Normal Arial 12 B I U

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A Sample has following values.
101, 99, 111, 199, 150, 140
Find out the maximum likelihood estimate of population mean.

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

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Write down critical region for the following hypothesis.
 $H_0 : \sigma^2 = 20$
 $H_1 : \sigma^2 < 20$
Where, $\alpha = 0.01$ and $n=10$

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

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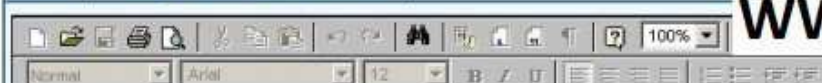


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What is the concept of extrapolation in regression analysis?

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

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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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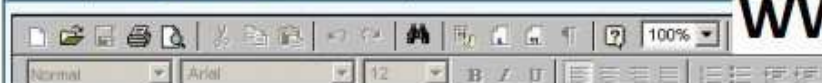
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For the following table we want to test the independence of smoking pattern and marital status. What will be the degrees of freedom for the chi-square test of independence?

Marital Status	Smoking Pattern			Total
	Total self-restraint	Only at times	Regular Smoker	
Single	67	213	74	354

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

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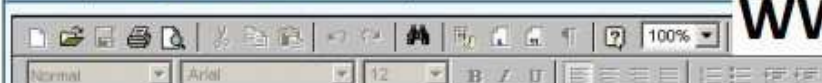


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Find the proportion for the X_1 and X_2 , Where $X_1 = 300$ with sample size $= n_1 = 400$ and $X_2 = 200$ with sample size $= n_2 = 300$.

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

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Calculate class boundaries from the following data.

Age Group	f
20-29	2
30-39	4
40-49	5

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

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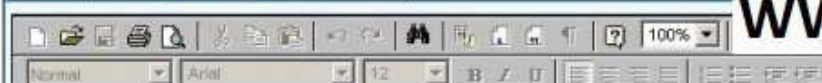


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A certain type of storage battery lasts on the average 3.0 years, with a standard deviation of 0.5 year. Assuming that the battery lives are normally distributed, find the probability that a given battery will last less than 2.3 years.

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

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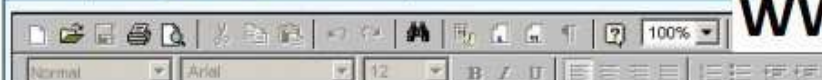
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For the Given information, what is your conclusion in testing the indicated null hypothesis?

$$n_1 = 13, n_2 = 41, s_1^2 = 6.3, s_2^2 = 15.6, H_0: \sigma_1^2 = \sigma_2^2 \text{ and } H_1: \sigma_1^2 > \sigma_2^2$$

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

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In a random sample of 200 persons having their lunch at the University cafeteria on meatless day it was observed that 30 percent preferred vegetable dishes. Find 95% confidence interval for p.

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

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Answer the following questions:

- i. Which method has been used for collecting the data in the following case?
"An investigator collects the information personally from the individuals concerned".
- i. Find the sampling error when the population mean is 15.785 and sample mean is 15.6.
- ii. Write down any two types of nonrandom sampling
- iii. What is the singular of strata?

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

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