



Virtual University

About Us

STA301  
Solved Final Term Paper 3

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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)

$P(A \text{ or } B) = P(A) + P(B)$ , then A and B are:

Answer ( Please select your correct option )

[WWW.VirtualAcademyLive.com](http://WWW.VirtualAcademyLive.com)

☒ Mutually exclusive events

☐ Independent events

☐ Exhaustive events

☐ Equally likely events

Made by: Waqar Siddhu

Question No : 2 of 52

Marks: 1 (Budgeted Time 1 Min)

First moment about origin is always equals to:

Answer ( Please select your correct option )

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☐ Mean

☐ Variance

☐ Standard Deviation

☒ Zero

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Question No : 3 of 52

Marks: 1 (Budgeted Time 1 Min)

 $E(4X + 5) =$  \_\_\_\_\_

Answer ( Please select your correct option )

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☐ 16 E (X)☒ 16 E (X) + 5☐ 12 E (X)☒ 4 E (X) + 5

Made by: Waqar Siddhu

Question No : 4 of 52

Marks: 1 (Budgeted Time 1 Min)

When two coins are tossed the probability of at least one head is:

Answer ( Please select your correct option )

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☐ 1/4☒ 3/4☐ 2/4☐ 4/4

Made by: Waqar Siddhu

Question No : 5 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $\sigma^2$  is unknown, then we use Z-test if the sample size is:

Answer ( Please select your correct option )

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☒  $n \geq 30$ ☒  $n < 30$ ☐  $n = 25$ ☐  $n = 20$ 

Made by: Waqar Siddhu



Question No : 6 of 52

Marks: 1 (Budgeted Time 1 Min)

When a coin is tossed 3 times, the probability of 3 tails is:

Answer ( Please select your correct option )

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☒ 1/8

☐ 2/4

☐ 3/8

☐ 2/8

Made by: Waqar Siddhu

Question No : 7 of 52

Marks: 1 (Budgeted Time 1 Min)

The F-distribution has ..... parameter.

Answer ( Please select your correct option )

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☐ One

☐ No

☒ Two

☐ Three

Made by: Waqar Siddhu

Question No : 8 of 52

Marks: 1 (Budgeted Time 1 Min)

Which one of the following provides the basis for hypothesis testing?

Answer ( Please select your correct option )

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☐ Null hypothesis

☐ Alternative hypothesis

☐ Critical value

☒ Test-statistic

Made by: Waqar Siddhu

Question No : 9 of 52

Marks: 1 (Budgeted Time 1 Min)

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 alternative hypothesis is:

Answer ( Please select your correct option )

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☐  $H_1: \mu = 100$

☐  $H_1: \mu > 100$

☐  $H_1: \mu < 100$

☒  $H_1: \mu \neq 100$

Made by: Waqar Siddhu

Question No : 10 of 52

Marks: 1 (Budgeted Time 1 Min)

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 )

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☒  $H_0: \mu = 100$

☐  $H_0: \mu > 100$

☐  $H_0: \mu < 100$

☐  $H_0: \mu \neq 100$

Made by: Waqar Siddhu

Question No : 11 of 52

Marks: 1 (Budgeted Time 1 Min)

By definition  $f(x_i | y_j) =$  \_\_\_\_\_

Answer ( Please select your correct option )

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☒  $\frac{f(x_i, y_j)}{h(y_j)}$

☐  $\frac{f(x_i, y_j)}{h(x_i)}$

☐  $f(x_i, y_j)$

☐  $f(y_j)$

Made by: Waqar Siddhu



Question No : 12 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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☐  $\chi^2$  -distribution.

☐ T-distribution.

☐ Z-distribution.

☒ F-distribution.

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Question No : 13 of 52

Marks: 1 (Budgeted Time 1 Min)

Which one of the following is the most common example of a situation for which the main parameter of interest is a population proportion?

Answer ( Please select your correct option )

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☐ An observational study

☐ A normal experiment

☐

☒ A binomial experiment

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Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

An estimator which has the smallest standard error among all unbiased estimators fulfills the property of \_\_\_\_\_.

Answer ( Please select your correct option )

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☐ Unbiasedness

☒ Efficiency

☐ Consistency

☒ Sufficiency

Made by: Waqar Siddhu

Question No : 14 of 52

Marks: 1 (Budgeted Time 1 Min)

An estimator which has the smallest standard error among all unbiased estimators fulfills the property of \_\_\_\_\_.

Answer ( Please select your correct option )

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☐ Unbiasedness

☐ Efficiency

☐ Consistency

☐ Sufficiency

Made by: Waqar Siddhu

Question No : 15 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following can never be taken as the probability of an event?

Answer ( Please select your correct option )

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☐ 1

☐ 0

☐ 0.5

☒ -0.5

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Question No : 16 of 52

Marks: 1 (Budgeted Time 1 Min)

A set is any well-defined collection of

Answer ( Please select your correct option )

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☐ Positive Objects

☐ Negative Objects

☐ Same Objects

☒ Distinct Objects

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Question No : 17 of 52

Marks: 1 (Budgeted Time 1 Min)

Measure of dispersion is used to calculate the:

Answer ( Please select your correct option )

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☐ Central value

☐ Highest value

☐ Lowest value

☒ Scattered value

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Question No : 18 of 52

Marks: 1 (Budgeted Time 1 Min)

If X and Y are independent variables then  $\text{Var}(X-Y) =$  \_\_\_\_\_

Answer ( Please select your correct option )

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☒  $\text{Var}(X) - \text{Var}(Y)$

☐  $\text{Var}(X) + \text{Var}(Y)$

☐  $\text{Var}(X+Y)$

☐  $\text{Var}(X) \times \text{Var}(Y)$

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Question No : 19 of 52

Marks: 1 (Budgeted Time 1 Min)

How the standard error is decreased :

Answer ( Please select your correct option )

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☐ By decreasing the sample size

☐ By decreasing the mean

☐ By increasing the standard deviation

☒ By increasing the sample size

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Question No : 20 of 52

Marks: 1 (Budgeted Time 1 Min)

The total number of samples when sampling is done with replacement is equal to:

Answer ( Please select your correct option )

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- ☒  $N^n$
- ☐  $C_x^N$
- ☐  $\frac{N-n}{N-1}$
- ☐ 1

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Question No : 21 of 52

Marks: 1 (Budgeted Time 1 Min)

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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Question No : 22 of 52

Marks: 1 (Budgeted Time 1 Min)

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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Question No : 23 of 52

Marks: 1 (Budgeted Time 1 Min)

For  $\alpha = 0.01$ , the critical values of  $z$  for two tailed test are equal to:

Answer ( Please select your correct option )

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☒ -2.58 and +2.58

☐ -2.33 and +2.33

☐ -1.645 and +1.645

☐ -1.96 and +1.96

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Question No : 24 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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☒ Type I error

☐ Type II error

☐ Correct decision

☐ No information regarding this

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Question No : 25 of 52

Marks: 1 (Budgeted Time 1 Min)

"A point estimate plus/minus a few times the standard error of that estimate". This statement represents:

Answer ( Please select your correct option )

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☐ Confidence interval

☐ Critical region

☐ Acceptance region

☐ Critical value

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Question No : 26 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

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☐  $P \leq 0.48$ ☐  $P = 0.48$ ☒  $P < 0.48$ ☐  $P \geq 0.48$ 

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Question No : 27 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $\bar{X}$  is the mean of the n observations, then which test statistic will be used to calculate the confidence limits of the population variance  $\sigma^2$ ?

Answer ( Please select your correct option )

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☐ Z-statistic☐ T-statistic☐  $\chi^2$ -statistics

not sure

☐ F-statistics

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Question No : 28 of 52

Marks: 1 (Budgeted Time 1 Min)

To find the confidence interval for the ratio of two variances, we use

Answer ( Please select your correct option )

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☒ F-Distribution☐ Z-Distribution☐ Chi-square-Distribution☐ t-Distribution

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Question No : 29 of 52

Marks: 1 (Budgeted Time 1 Min)

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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Question No : 30 of 52

Marks: 1 (Budgeted Time 1 Min)

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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Question No : 31 of 52

Marks: 1 (Budgeted Time 1 Min)

In a binomial experiment the total number of trials are:

Answer ( Please select your correct option )

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☒ Fixed in advance

☐ Changeable according to situation

☐ Unpredictable

☐ Not independent

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Question No : 32 of 52

Marks: 1 (Budgeted Time 1 Min)

The lottery tickets issued for the purpose of money-making follows a:

Answer ( Please select your correct option )

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☐ Normal distribution

☒ Discrete uniform distribution

☐ Binomial distribution

☐ Hypergeometric distribution

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Question No : 33 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following value could not represent a coefficient of correlation?

Answer ( Please select your correct option )

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☐  $r = 0.99$

☐  $r = 1.09$

☐  $r = -0.73$

☐  $r = -1$

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Question No : 34 of 52

Marks: 1 (Budgeted Time 1 Min)

In a one way ANOVA test there are 5 observations in each of three treatments. The degrees of freedom for the treatments is:

Answer ( Please select your correct option )

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☐ 5

☐ 3

☐ 1

☒ 2

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Question No : 35 of 52

Marks: 1 (Budgeted Time 1 Min)

If  $P(B|A) = 0.25$  and  $P(A \cap B) = 0.20$ , then  $P(A) =$

Answer ( Please select your correct option )

[WWW.VirtualAcademyLive.com](http://WWW.VirtualAcademyLive.com)☐ 0.05☒ 0.80☐ 0.95☐ 0.75**Made by: Waqar Siddhu**

Question No : 36 of 52

Marks: 1 (Budgeted Time 1 Min)

If a random variable  $X$  denotes the number of heads when three distinct coins are tossed, the  $X$  assumed the values:

Answer ( Please select your correct option )

[WWW.VirtualAcademyLive.com](http://WWW.VirtualAcademyLive.com)☒ 0,1,2,3☐ 1,3,3,1☐ 1, 2, 3☐ 3, 2**Made by: Waqar Siddhu**

Question No : 37 of 52

Marks: 1 (Budgeted Time 1 Min)

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

Answer ( Please select your correct option )

[WWW.VirtualAcademyLive.com](http://WWW.VirtualAcademyLive.com)☐ 1☐ 0.5☒ 0☐ 0.25**Made by: Waqar Siddhu**

Question No : 38 of 52

Marks: 1 (Budgeted Time 1 Min)

Atmosphere pressure is the example of

Answer ( Please select your correct option )

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- ☐ Constant
- ☐ Qualitative variable
- ☒ Quantitative variable
- ☐ None of the above

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Question No : 39 of 52

Marks: 1 (Budgeted Time 1 Min)

Which of the following scale has true zero point?

Answer ( Please select your correct option )

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- ☒ Ratio Scale
- ☐ Interval scale
- ☐ Nominal scale
- ☐ Ordinal scale

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Question No : 40 of 52

Marks: 1 (Budgeted Time 1 Min)

Given the series 1,2,1,1,2,2,2,2,3,4,5,3,2,3,1,4,2,3. Which one of the following is mode of the given series:

Answer ( Please select your correct option )

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- ☐ 4
- ☐ 3
- ☐ 2
- ☒ 1

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Question No : 41 of 52

Marks: 2 (Budgeted Time 4 Min)

Describe the Poisson distribution as the limiting form of the binomial distribution.

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

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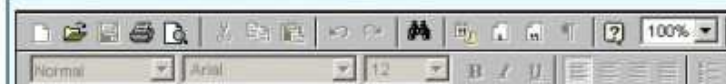
Question No : 42 of 52

Marks: 2 (Budgeted Time 4 Min)

Define Disjoint Sets.

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

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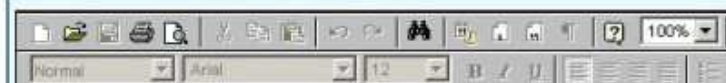
Question No : 43 of 52

Marks: 2 (Budgeted Time 4 Min)

What is acceptance region?

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

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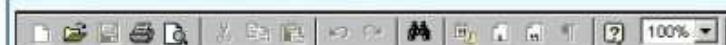
Question No : 44 of 52

Marks: 2 (Budgeted Time 4 Min)

If there are K treatments and R rows in a Randomized Complete Block Design then calculate the total number of experimental units used.

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

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Normal Arial 12 B I U

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Question No : 45 of 52

Marks: 3 (Budgeted Time 6 Min)

In how many ways a three-person committee can be formed from a group of ten persons? (Use the formula)

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

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Normal Arial 12 B I U

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Question No : 46 of 52

Marks: 3 (Budgeted Time 6 Min)

From the given data, calculate mean and standard deviation of sampling distribution of mean if the sampling is done with replacement.

$N = 120, n = 64, \mu = 50, \sigma = 2$

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

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Normal Arial 12 B I U

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Question No : 47 of 52

Marks: 3 (Budgeted Time 6 Min)

Construct 90% confidence interval for the difference in means  $\mu_1 - \mu_2$  in case of paired observations, where

$$\bar{d} = 1.8, s_d = 1.32, t_{0.05(9)} = 1.833$$

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

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Question No : 48 of 52

Marks: 3 (Budgeted Time 6 Min)

For a data  $X : N(\mu, \sigma^2)$ . Two unbiased estimators  $T_1$  and  $T_2$  have following variances

$$V(T_1) = \frac{11\sigma^2}{25}$$

$$V(T_2) = \frac{9\sigma^2}{25}$$

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

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Question No : 49 of 52

Marks: 5 (Budgeted Time 10 Min)

A man travels on car from Lahore to karachi on Motor way in 8 stages of equal intervals. The speed of the car in the various stages was observed to be 110, 116, 120, 114, 115, 112, 120, 117 kilometers per hour. Find the average speed at which the car travels.

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

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Question No : 50 of 52

Marks: 5 (Budgeted Time 10 Min)

A random sample of size three is drawn without replacement from the population consisting of four numbers 4, 5, 5, 7. Sampling distribution of sample means is calculated as below,

| Sample Means ( $\bar{X}$ ) | $f(\bar{X})$ |
|----------------------------|--------------|
| 14/3                       | 1/4          |
| 16/3                       | 2/4          |
| 17/3                       | 1/4          |

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

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Question No : 51 of 52

Marks: 5 (Budgeted Time 10 Min)

If  $n = 1150, x = 450, p = 0.39, H_0 : p_0 = 0.5, \text{ and } \alpha = 0.05$   
Test the stated hypothesis.  
(Use table value of  $z = \pm 1.96$ )

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

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Question No : 52 of 52

Marks: 5 (Budgeted Time 10 Min)

A personal manager is interested in trying to determine whether absenteeism is greater on some specific day of the week or not? His records for the past year show the following sample distributions.

|                   |        |         |           |          |        |
|-------------------|--------|---------|-----------|----------|--------|
| Day of the week:  | Monday | Tuesday | Wednesday | Thursday | Friday |
| No. of absentees: | 66     | 57      | 54        | 48       | 75     |

Test goodness of fit.

Where test statistic  $\text{chi-square} = \sum \frac{(o_i - e_i)^2}{e_i} = 7.50$

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

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