

Question # 1 of 3 (Start time: 08:04:37 PM, 04 June 2022)

Total Marks: 1

In a completely randomized design, a treatment sum of squares is $SSTr$ and its corresponding degree of freedom is $k-1$, the error sum of squares is SSE with degree of freedom $n-k$, the mean square treatment ($MSTr$) will be

Select the correct option

☐	$k-1 / SSTr$
☐	$SSTr / n-k$
☐	$SSTr / SSE$
☒	$SSTr / k-1$

[Click to Save Answer & Move to Next Question](#)

Question # 2 of 3 (Start time: 08:05:20 PM, 04 June 2022)

Total Marks: 1

Randomization, Replication and Local Control are the

Select the correct option

☐	Basic types of systematic error
☐	Origins of experimental error
☐	Remedial measures
☒	Basic principles of experimental design

[Click to Save Answer & Move to Next Question](#)

Question # 3 of 3 (Start time: 08:05:45 PM, 04 June 2022)

Total Marks: 1

A term referring to the amount of balancing, blocking and grouping of the experimental units is

Select the correct option

☐	Extraneous factor
☒	Local control
☐	Systematic error
☐	Spurious effect

[Click to Save Answer & Move to Next Question](#)



One of the purpose of randomization is

Select the correct option

- ☐ Reduce the cost
- ☐ To remove the bias and other sources of extraneous variation
- ☐ to include as many as possible factors in the model
- ☐ Perform the statistical analysis

Click to Save Answer & Move to Next Question





BC190410010: AYESHA RASHEED

Time Left

89



STAT408: Quiz 1

Quiz Start Time: 06:07 PM, 04 June 2022

Question # 1 of 3 (Start time: 06:07:55 PM, 04 June 2022)

Total Marks: 1

Analysis of variance is used to test the

Select the correct option

- ☐ Equality of two population variances
- ☒ Equality of three or more population means
- ☐ Equality of two population means
- ☐ Equality of three or more population variances

Click to show answer & Move to next question



BC190410816: AYESHA RASHEED

Time Left 88
00:00:00

STAT408: Quiz 1

Quiz Start Time: 06:07 PM, 04 June 2022

Question # 2 of 3 (Start time: 06:09:01 PM, 04 June 2022)

Total Marks: 1

The random process of assigning treatments to the experimental units can be done by

Select the correct option

- | | |
|-----------------------|--------------------------------|
| ☐ | Researcher's own choice |
| ☐ | Repeating the basic experiment |
| ☐ | Using random numbers table |
| ☐ | None of these |

Click on the correct answer to move to the next question



BC190410016: AYESHA RASHEED

Time Left 88 sec(s)

STAT408: Quiz 1

Quiz Start Time: 06:07 PM, 04 June 2022

Question # 2 of 3 (Start time: 06:09:01 PM, 04 June 2022)

Total Marks: 1

The random process of assigning treatments to the experimental units can be done by

Select the correct option

- | | |
|-----------------------|--------------------------------|
| ☐ | Researcher's own choice |
| ☐ | Repeating the basic experiment |
| ☐ | Using random numbers table |
| ☐ | None of these |

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BC190410016: AYESHA RASHEED

Time Left 88 sec(s)

STAT408: Quiz 1

Quiz Start Time: 06:07 PM, 04 June 2022

Question # 2 of 3 (Start time: 06:09:01 PM, 04 June 2022)

Total Marks: 1

The random process of assigning treatments to the experimental units can be done by

Select the correct option

- | | |
|-----------------------|--------------------------------|
| ☐ | Researcher's own choice |
| ☐ | Repeating the basic experiment |
| ☐ | Using random numbers table |
| ☐ | None of these |

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BC190410816: AYESHA RASHEED

Time Left 89
04:06 (s)

STAT408: Quiz 1

Quiz Start Time: 06:07 PM, 04 June 2022

Question # 1 of 3 (Start time: 06:07:55 PM, 04 June 2022)

Total Marks: 1

Analysis of variance is used to test the

Select the correct option

- | | |
|-----------------------|--|
| ☐ | Equality of two population variances |
| ☐ | Equality of three or more population means |
| ☐ | Equality of two population means |
| ☐ | Equality of three or more population variances |

Click on the correct answer to move to the next question



One of the purpose of randomization is

Select the correct option



Reduce the cost



To remove the bias and other sources of extraneous variation



to include as many as possible factors in the model



Perform the statistical analysis

Click to Save Answer & Move to Next Question





In randomized designs, the treatments are applied to the experimental units by some

Select the correct option



Systematic pattern



Following other's wish



Random process



None of these



Click to Save Answer & Move to Next Question





BC190410016: AYESHA RASHEED

Time Left 86 sec(s)

STAT408: Quiz 1

Quiz Start Time: 06:07 PM, 04 June 2022

Question # 3 of 3 (Start time: 06:10:38 PM, 04 June 2022)

Total Marks: 1

The null hypothesis in a completely randomized design is

Select the correct option

- ☐ Subtraction of all treatment means is equal to 1.
- ☐ Addition of all treatment means is equal to 1.
- ☒ All treatment means are equal.
- ☐ Not all treatment means are equal.



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A completely randomized design is considered to be most useful in the situations when the experimental units are

Select the correct option

- | | |
|-----------------------|---------------|
| ☐ | Heterogeneous |
| ☐ | None of these |
| ☐ | Homogeneous |
| ☐ | Assorted |

Experiment is performed on

Select the correct option

☐	Sampling Frame
☐	Laboratory Experiments
☐	Experimental Unit
☐	Field Plot

Question # 1 of 3 (Start time: 10:55:16 AM, 05 June 2022)

Total Marks: 1

In ANOVA, the observations must be

Select the correct option



Skewed to left



Independent



Skewed to right



Dependent

[Click to Save Answer & Move to Next Question](#)

Question # 2 of 3 (Start time: 10:56:36 AM, 05 June 2022)

Total Marks: 1

The variation among identically and independently treated experimental units is defined as

Select the correct option

☒

Experimental error

☐

Systematic error

☐

Standard error

☐

Random error

[Click to Save Answer & Move to Next Question](#)

Question # 3 of 3 (Start time: 10:57:54 AM, 05 June 2022)

Total Marks: 1

Experimental error may be due to the

Select the correct option



joint effect of treatments and experimental units



Extraneous Factors



All of these



Natural variation among the experimental units

[Click to Save Answer & Move to Next Question](#)



Question # 1 of 3 (Start time: 11:27:53 AM, 05 June 2022)

1

The effect of a third variable on both response and independent variable is known as

Select the correct option

☐ Blocking effect☒ Spurious effect☐ Balancing effect☐ Climatic effect

Click to View Answer & Move to Next Question



Question # 2 of 3 (Start time: 11:29:04 AM, 05 June 2022)

Planning an experiment to obtain appropriate data and drawing inference out of the data with respect to any problem under investigation is

Select the correct option

- | | |
|-----------------------|---|
| ☐ | Probability and Probability Distributions |
| ☐ | Design and Analysis of Experiment |
| ☐ | Design and Statistical Inference |
| ☐ | Laboratory Experiment |

Click Here for Answer & More



STAT408-Quiz 1

Quiz Start Time: 11:27 AM, 05 June

Question # 3 of 3 (Start time: 11:30:07 AM, 05 June 2022)

Total Ma

In basic ANOVA table, the variation is decomposed into

Select the correct option

- | | |
|-----------------------|--------------------------------|
| ☐ | Within group |
| ☐ | Between group |
| ☐ | None of these |
| ☐ | Between group and within group |

[Click on "Copy Answer & Move to Next Question"](#)

If the null hypothesis is true and the ANOVA assumptions are valid, $\frac{MSTR}{MSE}$ is an F-distribution with $MSTR$ df equal to $k - 1$ and MSE df equal to $n - k$.

If the means of the k populations are not equal, the values of $\frac{MSTR}{MSE}$ overestimates σ^2 .

We will reject H_0 if the resulting value of $\frac{MSTR}{MSE}$ appears to be too large to be random from the appropriate F-distribution.

ANOVA Table

The ANOVA table decomposes the variance into two components:

- ◆ A between-group component (treatments), and
- ◆ a within-group component (error)

The F-ratio is the ratio of the between-group estimate to the within-group estimate.

Lesson 10: Completely Randomized Design (CRD)

Some Definitions

STAT408: Quiz 1

Quiz Start Time: 11:49 AM, 05 June 202

Question # 2 of 3 (Start time: 11:49:37 AM, 05 June 2022)

Total Marks:

In systematic designs, the treatments are applied to the experimental units by some

Select the correct option

- | | |
|----------------------------------|------------------------|
| ☐ | None of these |
| ☐ | Systematic pattern |
| ☒ | Random process |
| ☐ | Following other's wish |

11:50 AM

4G 431 B/S 95



Quiz
quiz.vu.edu.pk



STAT400:Quiz 1

Quiz Start Time: 11:49 AM, 05 June

Question # 3 of 3 (Start time: 11:50:12 AM, 05 June 2022)

Total Ma

A factor is a general type or category of

Select the correct option



Experimental unit



Replication



Treatments



Error

Correct Answer: Treatments

STAT408:Quiz 1

Question # 3 of 3 (Start time: 12:30:15 PM, 05 June 2022)

A repetition of a basic experiment is called

Select the correct option

- | | |
|-----------------------|---------------|
| ☐ | Randomization |
| ☐ | Balancing |
| ☐ | Replication |
| ☐ | Local control |
- 

Question # 2 of 3 (Start time: 12:29:07 PM, 05 June 2022)

'Blocking' refers to

Select the correct option

- ☐ None of these
- ☒ Homogeneous group of experimental units
- ☐ Heterogeneous group of experimental units
- ☐ Binding of homogeneous and heterogeneous experimental units in a group



Question # 1 of 3 (Start time: 12:27:49 PM, 05 June 2022)

The null hypothesis in a completely randomized design is

Select the correct option



Addition of all treatment means is equal to 1.



All treatment means are equal.



Subtraction of all treatment means is equal to 1.



Not all treatment means are equal.



BC190407462: MUHAMMAD SHAHABAZ

Time Left 90
sec(s)

STAT408:Quiz 1

Quiz Start Time: 02:03 PM, 05 June 2022

Question # 1 of 3 (Start time: 02:03:56 PM, 05 June 2022)

Total Marks: 1

A completely randomized design is applicable to a number of treatments

Select the correct option

- | | |
|-----------------------|-----------|
| ☐ | Small |
| ☐ | Specified |
| ☐ | Large |
| ☐ | All |

[Click to Save Answer & Move to Next Question](#)



BC190407462: MUHAMMAD SHAHABAZ

Time Left 89
sec(s)

STAT408:Quiz 1

Quiz Start Time: 02:03 PM, 05 June 2022

Question # 2 of 3 (Start time: 02:05:00 PM, 05 June 2022)

Total Marks: 1

The loss of information in CR design due to missing data compared to other designs is

Select the correct option

- | | |
|-----------------------|---------------|
| ☐ | None of these |
| ☐ | Small |
| ☐ | Large |
| ☐ | Equal |

[Click to Save Answer & Move to Next Question](#)



BC190407462: MUHAMMAD SHAHABAZ

Time Left 90
sec(s)

STAT408:Quiz 1

Quiz Start Time: 02:03 PM, 05 June 2022

Question # 3 of 3 (Start time: 02:06:27 PM, 05 June 2022)

Total Marks: 1

A doctor treats a patient with a skin condition with different creams to see which is most effective. In this example, a treatment is

Select the correct option

☐	Patient
☐	A doctor
☐	Skin condition
☐	Different creams

[Click to Save Answer & Move to Next Question](#)



In a Randomized Complete Block design, the randomization is restricted in

Select the correct option

- | | |
|-----------------------|------------------|
| ☐ | One direction |
| ☐ | No restriction |
| ☐ | Two directions |
| ☐ | Three directions |

Click to Save Answer & Move to Next Question



2:24

0.65 KB/S 4G 93



Quiz
quiz.vu.edu.pk



BC190201234: MUHAMMAD YASIR NASEER

Time Left 89 sec(s)

STAT408:Quiz 1

Quiz Start Time: 02:23 PM, 05 June 2022

Question # 2 of 3 (Start time: 02:24:01 PM, 05 June 2022)

Total Marks: 1

The F ratio in a completely randomized ANOVA is the ratio of

Select the correct option



MSTR/MSE



MST/MSE



MSE/MSTR



MSE/MST

Click to Save Answer & Move to Next Question

2:33

Vol 1
LTE2 4G 14%

quiz.vu.edu.pk/QuizQuestio

24



BC190407814: MOHSAN SAEED

Time Left 85
sec(s)

STAT408:Quiz 1

Quiz Start Time: 02:31 PM, 05 June 2022

Question # 3 of 3 (Start time: 02:33:21 PM, 05 June 2022)

Total Marks: 1

If the total degree of freedom in a completely randomized design is $n-1$ and the between treatments is $k-1$ then the degree of freedom within error will be

Select the correct option

☐	$n-k+2$
☐	$n-k-1$
☐	$n-k$
☐	$k-2$

Click to Save Answer & Move to Next Question



Question # 3 of 3 (Start time: 01:19:10 PM, 05 June 2022)

When the treatments are applied to the experimental units by some systematic pattern or by the choice of the

Select the correct option

☐	Systematic design
☐	None of these
☒	Randomized design
☐	Both Randomized and Systematic design

Question # 3 of 3 (Start time: 04:35:22 PM, 05 June 2022)

Total Marks: 1

In a completely randomized design, a mean square treatment MSTr is 6 and its corresponding degree of freedom is 3, the sum of squares for treatments SSTr will be

Select the correct option



18



2



3



9

$$MSTR = \frac{SSTR}{D.F.}$$

[Click to Start Answer & Move to Next Question](#)

Question # 1 of 3 (Start time: 03:45:44 PM, 05 June 2022)

Total Marks: 1

In Analysis of Variance if H_0 is rejected, we conclude that

$H_0 \leftarrow$

Select the correct option

☐

At least two population means are same

☐

At least two population means are different

☐

At least two population variances are different

☐

At least two population variances are same

[Click to Save Answer & Move to Next Question](#)

In a completely randomized design, a treatment sum of squares is $SSTr$ and its corresponding degree of freedom is $k-1$, the error sum of squares is SSE with degree of freedom $n-k$, the mean square treatment ($MSTr$) will be

Select the correct option

- | | |
|----------------------------------|--------------|
| ☐ | $SSTr / n-k$ |
| ☐ | $k-1 / SSTr$ |
| ☐ | $SSTr / SSE$ |
| ☒ | $SSTr / k-1$ |
- 

The basic entity or unit on which the experiment is performed, is called

Select the correct option



Factor



Levels of factor



Experimental unit



Treatment unit



Question # 1 of 3 (Start time: 12:35:46 PM, 03 June 2022)

Total Marks: 1

If in a CRD the experimental units are heterogeneous then the design is

Select the correct option

- | | |
|----------------------------------|-----------------|
| ☐ | Least efficient |
| ☒ | Most efficient |
| ☐ | Most sufficient |
| ☐ | Leas sufficient |

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Why this ad? ⓘ

Question # 2 of 3 (Start time: 12:37:56 PM, 03 June 2022)

Total Marks: 1

A factor of an experiment is

Select the correct option

☐	Experimental Unit	//
☐	Treatment	//
☒	Controlled Independent Variable	//
☐	Controlled Dependent Variable	//

←

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Why this ad? ⓘ

Which of the following event has no immediate successor in any network flow diagram?

Select the correct option

- ☐ Critical Event
- ☒ Head Event
- ☐ Tail Event
- ☐ Non-Critical Event

Source: Gatekeeper & Internet Help Center



random p

1 of 2



RANDOMIZATION

is a **random** process of assigning treatments to the experimental units.

on is usually done by using tables of random numbers, by drawing cards from a well shuffled pack of cards, or by drawing numbered balls from a shaken container.

STA: 408

POSE OF RANDOMIZATION



p

people

person

q¹w²e³r⁴t⁵y⁶u⁷i⁸o⁹p⁰

a

s

d

f

g

h

j

k

l



z

x

c

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b

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m



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,



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Contents

1. Basic concepts of ANOVA
2. CR Design

Analysis of Variance: A Conceptual Overview

- ▶ Analysis of Variance (ANOVA) can be used to test for the equality of three or more population means.
- ▶ Data obtained from observational or experimental studies can be used for the analysis.
- ▶ We want to use the sample results to test the following hypotheses:

$$H_0: \mu_1 = \mu_2 = \mu_3 = \dots = \mu_k$$

H_a : Not all population means are equal

Analysis of Variance: A Conceptual Overview

$$H_0: \mu_1 = \mu_2 = \mu_3 = \dots = \mu_k$$

H_a : Not all population means are equal



A completely randomized design is applicable to a number of treatments

Select the correct option



Specified



Large



Small



All

Click to Save Answer & Move to Next Question



BC190409174: ASIF IQBAL

Time Left

83

sec(s)

STAT408:Quiz 1

Quiz Start Time: 02:01 PM, 05 June 2022

Question # 2 of 3 (Start time: 02:02:59 PM, 05 June 2022)

Total Marks: 1

The effect of a third variable on both response and independent variable is known as

Select the correct option



Spurious effect



Blocking effect



Climatic effect



Balancing effect

Click to Save Answer & Move to Next Question



STAT408:Quiz 1

STAT408:Quiz 1

Question # 3 of 3 (Start time: 02:03:27 PM, 05 June 2022)

Planning an experiment to obtain appropriate data and drawing inference out of the data with respect to any problem

Select the correct option

- | | |
|----------------------------------|---|
| ☐ | Probability and Probability Distributions |
| ☐ | Laboratory Experiment |
| ☐ | Design and Statistical Inference |
| ☒ | Design and Analysis of Experiment |

Click to S



Vu Waqas 2

1 minute ago



BC190409163: MUHAMMAD WAQAS

Time Left 87 sec(s)

STAT408:Quiz 1

Quiz Start Time: 02:17 PM, 05 June 2022

Question # 1 of 3 (Start time: 02:17:25 PM, 05 June 2022)

Total Marks: 1

In Analysis of Variance if H_0 is rejected, we conclude that

Select the correct option



At least two population variances are same



At least two population means are different



At least two population variances are different



At least two population means are same

Click to Save Answer & Move to Next Question



Experimental error may be due to the

Select the correct option



Extraneous Factors



joint effect of treatments and experimental units



Natural variation among the experimental units



All of these

Click to Save Answer & Move to Next Question



BC190408973: HAMZA JAMIL

Time Left 58 sec(s)

STAT408:Quiz 1

Quiz Start Time: 04:32 PM, 05 June 2022

Question # 2 of 3 (Start time: 04:33:04 PM, 05 June 2022)

Total Marks: 1

In a completely randomized design, a mean square treatment $MSTr$ is 6 and its corresponding degree of freedom is 3, the sum of squares for treatments $SSTr$ will be

Select the correct option

☐	3
☐	2
☐	9
☒	18

Click to Save Answer & Move to Next Question



BC190408973: HAMZA JAMIL

Time Left

80
sec(s)

STAT408:Quiz 1

Quiz Start Time: 04:32 PM, 05 June 2022

Question # 3 of 3 (Start time: 04:33:50 PM, 05 June 2022)

Total Marks: 1

'Blocking' refers to

Select the correct option



None of these



Binding of homogeneous and heterogeneous experimental units in a group



Homogeneous group of experimental units



Heterogeneous group of experimental units

Click to Save Answer & Move to Next Question



BC190203902: IFRAHEEM HUSSAIN

Time Left

66
sec(s)

STAT408:Quiz 1

Quiz Start Time: 04:35 PM, 05 June 2022

Question # 1 of 3 (Start time: 04:35:16 PM, 05 June 2022)

Total Marks: 1

The analysis of variance techniques are suitable to the designs only which are

Select the correct option



Study design



Systematic design



Randomized design



Research design

Click to Save Answer & Move to Next Question



A factor is a _____ of treatments.

Select the correct option



None of these



Design Layout



Category



Experimental Error

Click to Save Answer & Move to Next Question



BC190203902: IFRAHEEM HUSSAIN

Time Left

36

sec(s)

STAT408:Quiz 1

Quiz Start Time: 04:35 PM, 05 June 2022

Question # 3 of 3 (Start time: 04:37:38 PM, 05 June 2022)

Total Marks: 1

The term 'local of control' refers to the

Select the correct option



Control of extraneous variations



Replication of experiment



Amount of balancing, blocking, and grouping of experimental units



Selection of experimental units



Click to Save Answer & Move to Next Question



BC190407195: ZARISH ASHRAF

Time Left 86
sec(s)

STAT408:Quiz 1

Quiz Start Time: 04:55 PM, 05 June 2022

Question # 1 of 3 (Start time: 04:55:11 PM, 05 June 2022)

Total Marks: 1

One of the purpose of randomization is

Select the correct option



Perform the statistical analysis



to include as many as possible factors in the model



Reduce the cost



To remove the bias and other sources of extraneous variation

Click to Save Answer & Move to Next Question



quiz.vu.edu.pk/Q



Question # 2 of 3 (Start time: 04:55:17 PM, 05 June 2022)

Planning an experiment to obtain appropriate data and drawing inference out of the data with respect to any prot

Select the correct option

- | | |
|----------------------------------|---|
| ☐ | Laboratory Experiment |
| ☒ | Design and Analysis of Experiment |
| ☐ | Design and Statistical Inference |
| ☐ | Probability and Probability Distributions |

Click



BC190407195: ZARISH ASHRAF

Time Left 82 sec(s)

STAT408:Quiz 1

Quiz Start Time: 04:55 PM, 05 June 2022

Question # 3 of 3 (Start time: 04:55:24 PM, 05 June 2022)

Total Marks: 1

The variation among identically and independently treated experimental units is defined as

Select the correct option



Systematic error



Experimental error



Random error



Standard error

Click to Save Answer & Move to Next Question