

## Unit 13 - Week 11

## Course outline

How does an NPTEL online course work?

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## Assignment 11

The due date for submitting this assignment has passed.  
As per our records you have not submitted this assignment.

Due on 2020-04-15, 23:59 IST.

1) Many experiments may continue for a long-time without any reliable results or firm conclusions. The approaches used for experimentation in this case are:

2 points

- (a) Factorial design approach
- (b) One-factor-at-a-time approach
- (c) Fractional factorial design approach
- (d) All of the above

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

2) When the levels of different factors are studied within a given level of another factor, the design is referred to as

2 points

- (a) Best guess design
- (b) Fractional factorial design
- (c) Nested design
- (d) Full factorial design

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

3) In any experimentation, both main effects and interaction effects among the factors need to be considered. In the following list of experimental design types, one is not suitable to measure interaction effect. Identify it.

2 points

- (a) One-factor-at-a-time approach
- (b) Factorial design
- (c) Fractional factorial design
- (d) Orthogonal array

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

4) The main purpose of conducting an experiment is:

2 points

- (a) To identify the inputs and outputs
- (b) To propose an input-output model
- (c) To understand the relationship among inputs, outputs and noise variable
- (d) To study the performance of a process or a system

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

d.

5) With two factors, each at three levels, the total number of treatment combinations with three replications for each treatment combination is:

2 points

- (a) 9
- (b) 16
- (c) 27
- (d) 6

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

c.

6) Randomization is considered one of the important principles to be followed in experimental design. This principle is especially important when

2 points

- (a) The response variables are in statistical control
- (b) The response variables are not in statistical control
- (c) Variation due to noise variables is large
- (d) Experiment needs to be conducted by a single operator only

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

7) Contour plots are used to depict the interaction effects among the factors in experimentation. If there is no interaction effect between two factors A and B, the axes of the plotted contours are:

2 points

- (a) Perpendicular to the axes of the factors, A and B
- (b) Parallel to the axes of the factors, A and B
- (c) The natural axes of the contours are rotated with respect to the axes of the factors, A and B
- (d) All of the above

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.

8) The number of treatment combinations in a  $3^{4-2}$  fractional factorial experiment in each replication is

2 points

- (a) 9
- (b) 18
- (c) 27
- (d) None of the above

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

a.

9) Factorial experiments are widely used in a manufacturing or a service system when

2 points

- (a) The number of factors are very large
- (b) The number of levels in each factor is not more than two
- (c) All the factors need to be considered
- (d) The number of factors and their levels are limited in number

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

d.

10) In a  $2^6$  full factorial design, the number of three-way interactions is

2 points

- (a) 15
- (b) 20
- (c) 24
- (d) 6

- a.  
 b.  
 c.  
 d.

No, the answer is incorrect.

Score: 0

Accepted Answers:

b.