

Unit 10 - Week 8

Course outline
How does an NPTEL online course work?
Week 0
Week 1
Week 2
Week 3
Week 4
Week 5
Week 6
Week 7
Week 8
<input checked="" type="radio"/> Lecture 38 : Introduction to Design of Experiment <input type="radio"/> Lecture 39 : Randomized Block Design <input checked="" type="radio"/> Lecture 40 : Randomized Block Design: Minitab Application <input type="radio"/> Lecture 41 : Factorial Design <input type="radio"/> Lecture 42 : Factorial Design: Minitab Application
<input checked="" type="radio"/> Quiz : Assignment 8 <input type="radio"/> Week 8 Feedback Form
Week 9
Week 10
Week 11
Week 12
DOWNLOAD VIDEOS
Assignment Detailed Solution
Text Transcripts

Assignment 8

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

Due on 2020-03-25, 23:59 IST.

- 1) What is the basic difference between accuracy and precision? 1 point
- Accuracy is running trials in an experiment in random order whereas precision deals with the nuisance factors.
 - Precision is a comparative measure of the observed values and is only a measure of the random errors.
 - Accuracy refers to the degree of closeness between the measured value and the true value whereas precision is not related to true value.
 - Precision is the proximity of measurement results to the true value whereas accuracy is the degree to which repeated (or reproducible) measurements under unchanged conditions show the same results.
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
c.
- 2) The method of eliminating the effects of extraneous variation due to noise factors and thereby improves the efficiency of experimental design is known as _____ 1 point
- Blocking
 - Randomizing
 - Replicating
 - None of the above
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
a.
- 3) Ashish conducted an experiment with 2 different levels with 4 different factors. For full factorial design, what will be the number of experiments runs. 1 point
- 4
 - 8
 - 16
 - 32
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

COMMON DATA QUESTIONS (QUESTION 4 to QUESTION 7):

The R & D manager of a manufacturing firm is in a state of dilemma whether the sales revenue (crores of rupees) is affected by sales region. Because there might be variability from one period to another period, he decides to use the randomized complete block design. The corresponding data are presented in the table below. (Significance level=0.05)

		Sales region					
		A	B	C	D	E	F
Period	1	18	9	15	22	9	10
	2	25	7	14	18	28	13
	3	20	8	12	9	15	17
	4	11	13	30	12	20	23
	5	18	11	25	15	16	8
	6	24	30	17	16	20	30

- 4) Calculate the mean sum of square between the sales regions. 1 point
- 171.22
 - 34.244
 - 72.112
 - 45.751
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
- 5) Calculate the mean sum of square between the periods. 1 point
- 360.56
 - 171.22
 - 1043.78
 - None of these
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
d.
- 6) Calculate the mean sum of square for error. 1 point
- 34.244
 - 72.112
 - 41.751
 - Data insufficient
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
c.
- 7) What conclusion you can draw for the blocks? 1 point
- Reject the hypothesis H_0
 - Accept the null hypothesis H_0
 - Data insufficient
 - None of these
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.

COMMON DATA QUESTIONS (QUESTION 8 to QUESTION 11):

The Director of IIM, Lucknow wants to study the effect of 'faculty' on the average performance (0 – 10 scale) of the participants of a training program. Five different faculty members (A, B, C, D, and E) were assigned to five different subjects of the training programmes conducted for five different batches because there might be variability from one subject to another subject as well as from one batch to another batch which is a Latin square design. The data as per the design are shown in Table. (Significance level = 0.05)

		Batch				
		1	2	3	4	5
Subject	1	A = 10	B = 6	C = 6	D = 6	E = 8
	2	B = 7	C = 6	D = 5	E = 1	A = 4
	3	C = 5	D = 3	E = 3	A = 2	B = 1
	4	D = 6	E = 4	A = 1	B = 2	C = 5
	5	E = 4	A = 2	B = 3	C = 8	D = 9

- 8) Calculate the mean sum of square between the faculties. 1 point
- 6.26
 - 7.06
 - 3.79
 - 25.04
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
a.
- 9) Calculate the sum of square between the subjects. 1 point
- 14.16
 - 25.04
 - 28.24
 - 56.64
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
d.
- 10) Calculate the mean sum of square between the batches. 1 point
- 6.26
 - 7.06
 - 14.16
 - 28.24
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
- 11) Calculate the mean sum of square of the error. 1 point
- 7.06
 - 6.26
 - 3.79
 - 1.86
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
c.

COMMON DATA QUESTIONS (QUESTION 12 to QUESTION 15):

The sales manager of a leading automobile show room at Kharagpur wishes to study the profession of its customers on its service quality in a 0 – 10 scale. In this experiment, the natures of profession as well as the monthly income level of the customers are taken as factors. Two different customers have been sampled under each experimental combination and the corresponding ratings are shown in the following Table. Assume the significance level 0.05.

Income Level (I)		Nature of Profession (P)			
		Engineer	Doctor	Lawyer	Others
< ₹ 100,000		3	3	8	10
		1	8	2	9
> ₹ 100,000		3	10	9	2
		7	4	7	8

- 12) The value of F ratio for between income levels is _____ 1 point
- 1.291
 - 1.089
 - 0.228
 - None of these
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
c.
- 13) The value of F ratio for between professions is _____ 1 point
- 1.291
 - 1.089
 - 0.228
 - None of these
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
b.
- 14) The value of F ratio for between income levels and profession is _____ 1 point
- 1.291
 - 1.089
 - 0.228
 - None of these
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
a.
- 15) What conclusion you can draw for component interaction 'Income level × profession'? 1 point
- There is no significance difference between the income levels in terms of the service quality.
 - There is no significance difference between the professions in terms of the service quality.
 - There is no significance difference between the interaction terms of income level and profession in terms of the service quality.
 - All of the above.
- a.
 b.
 c.
 d.
- No, the answer is incorrect.
Score: 0
Accepted Answers:
c.