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Courses » Six Sigma

Announcements

**Course**

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## Unit 6 - Week 5

### Course outline

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**Week 5**

- Lecture 17: Measurement System Analysis
- Lecture 18: Acceptance Sampling
- Lecture 19: Design of Sampling Plans
- Quiz : Week 5: Assignment (Jan 2018)
- Week 5 Assignment solution (Jan 2018)

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### Week 5: Assignment (Jan 2018)

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

**Due on 2018-02-28, 23:59 IST**

- Total No. of Questions: 15. Each question carries one point.
- Question 1 to 7 are objective type questions. Only one answer is correct per numbered item.
- Questions no. 5, 6, and 7 are common data question
- Question 8 to 12 are true/false statement questions.
- Question 13 to 15 are multiple choice questions. More than one answers are correct per numbered item

1) In a car manufacturing company, we observed one sample with  $N=500$ ,  $n=40$ , and  $c=2$  for inspection. For the given sample we attempt to draw the OC curve. Which type of OC curve is suitable for the sample? **1 point**

- Type A OC curve
- Type B OC curve
- Ideal OC curve
- All of the above

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Type A OC curve*

2) In a work measurement practical, one student measures the diameter of the shaft for four trails. The diameter is found it to be 75.5 cm, 75.2 cm, 75.54 cm and 75.7 cm. The actual diameter of the shaft is 75.5 cm. Which of the following statements is true for his measurements? **1 point**

- They have good accuracy and precision
- They have poor accuracy but good precision
- They have good accuracy but poor precision
- They are neither accurate nor precise

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*They have good accuracy and precision*

3) The fraction defective with a very high probability of acceptance is the: **1 point**

- Type I error rate.
- Acceptable quality level
- Average outgoing quality rate.
- Lot tolerance percent defective

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*Acceptable quality level*

4) If we say a Type I error has been made, what we mean is that we have \_\_\_\_\_ a lot for which the fraction defective is \_\_\_\_\_. **1 point**

- Rejected; less than AQL
- Accepted; less than LTPD
- Accepted; greater than LTPD
- Rejected; greater than LTPD

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**  
 Rejected; less than AQL

5) Common data Question  
 Common data for Questions 5, 6 and 7

1 point

Conduct a gage R&R study of the following data,

Operator A								
Trials	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8
1	69	98	80	82	58	99	87	69
2	68	97	78	85	56	98	89	72
3	65	95	79	86	50	99	91	71

  

Operator B								
Trials	Part 1	Part 2	Part 3	Part 4	Part 5	Part 6	Part 7	Part 8
1	62	99	79	81	50	99	85	73
2	64	93	77	78	51	102	89	72
3	65	96	78	79	52	101	80	70

Use following table 1 for calculation of  $d_2$  in gage R&R studies

Number of observation in sample	Factor $d_2$ for estimating sigma from $\bar{R}$
2	1.128
3	1.693
4	2.069
5	2.326

What would be the value of  $\sigma_{repeatability}$  and  $\sigma_{reproducibility}$

- 2.21 and 1.70
- 3.33 and 1.13
- 1.13 and 3.33
- 1.70 and 2.21

No, the answer is incorrect.  
 Score: 0

**Accepted Answers:**  
 2.21 and 1.70

6) What would be the value of  $\sigma_{R\&R}$

1 point

- 2.23
- 3.34
- 2.79
- 4.54

No, the answer is incorrect.  
 Score: 0

**Accepted Answers:**  
 2.79

7) Find out the value of P/T (Precision/Tolerance) ratio for Operator A

1 point

- 0.44
- 1.505
- 3.42
- 0.293

No, the answer is incorrect.  
 Score: 0

**Accepted Answers:**  
 0.293

8) Difference between a value measured and the true value is called observational error

1 point

- True

False

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*True*

9) Reproducibility means the closeness of output readings for the same input when there are changes in the method of measurement and conditions of measurement

1 point

True

False

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*True*

10) A rectified inspection assumes that all defective items in the lot will be replaced with good items if the lot is rejected and that any defective items in the sample will be replaced if the lot is accepted

1 point

True

False

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*True*

11) The maximum value of the average outgoing quality over all possible values of the proportion defective is called Average outgoing quality.

1 point

True

False

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*False*

12) Probability that a lot containing acceptable quality level will be rejected is called Consumer's risk.

1 point

True

False

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*False*

13) Which of the following statements are correct?

1 point

- The OC curve plots the probability of accepting the lot for a range of proportions of defective items
- A graphic display of the performance of a sampling plan, showing the probability of accepting the lot for a range of proportions is called Exponential curve
- Chance of committing type I error which means accepting a good lot
- Type A OC curve is the probability of acceptance for an individual lot coming from finite production

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*The OC curve plots the probability of accepting the lot for a range of proportions of defective items*

*Type A OC curve is the probability of acceptance for an individual lot coming from finite production*

14) In double sampling plan,

1 point

- If the numbers of defects is in between the two cut off numbers C1 and C2 then we will take another sample
- Requires two sample sizes and two acceptance numbers
- Acceptance and rejection is done based on single sample
- Items are selected from a lot one at a time and after inspection of each item a decision is made to accept or reject the lot or select another unit.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*If the numbers of defects is in between the two cut off numbers C1 and C2 then we will take another sample*

*Requires two sample sizes and two acceptance numbers*



15) Which of the following statements are correct referring to Ideal OC curve?

1 point

- As compare to practical OC curve, the ideal OC curve always provides high value of probability of acceptance.
- As compare to practical OC curve, the ideal OC curve always provides low value of probability of acceptance.
- As compare to practical OC curve, the ideal OC curve always provides same value of probability of acceptance.
- An Ideal OC curve is rectangular shaped curve that accepts all the lots with quality equal to or better than AQL.

**No, the answer is incorrect.**

**Score: 0**

**Accepted Answers:**

*As compare to practical OC curve, the ideal OC curve always provides high value of probability of acceptance.*

*An Ideal OC curve is rectangular shaped curve that accepts all the lots with quality equal to or better than AQL.*



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