Question 1

Not yet answered

Marked out of 7.00

Flag question

It is desired to have assurance with 90% probability that at least 97% of the products in a population are conforming. How many conforming samples(randomly selected) must be tested with no failures in order to achieve the desired assurance?

Answer:

Next

Question 2

Not yet answered

Marked out of 7.00

Flag question

An experimental design was run to identify important factors affecting a particular response Y. The following design was run and the responses were recorded. Identify the design (what design was run).

A	B	C	D	Y
-	-	-	-	46
+	-	-	+	95
-	+	-	+	43
+	+	-	-	76
-	-	+	+	73
+	-	+	-	56
-	+	+	-	85
+	+	+	+	98

Select one:

- a. 2^k Factorial design
- b. Placket Burman Design
- c. Central Composite Design
- d. Fractional Factorial Design

Question 3

Not yet answered

Marked out of 5.00

Flag question

Consider an assembled product that consists of four components where the length of an assembled unit is the sum of the length of the individual components (Y=A+B+C+D). The mean length of each component is given below as well as the corresponding standard deviation.

Component	Mean Length μ	Length sd σ
A	3	0.13
B	5	0.19
C	7	0.23
D	4	0.20

Part A: Calculate the 2 sided natural tolerance limits for component B. What was the lower tolerance limit for the mean length of component B?

Answer:

Question 4

Not yet answered

Marked out of 5.00

Flag question

Part B. Refer to table above in part A. Calculate the 2 sided natural tolerance limits of the assembled product. What is the upper natural tolerance limit of the assembled product?

Answer:

Question 5

Not yet answered

Marked out of 4.00

Flag question

Using Mil-Std-105E (ANSI/ASQ Z1.4), find the appropriate single sampling plan for a lot size of 15,000, under inspection level S-4, tightened inspection, and an AQL=4.0

Part 1: Sample Size n =

Answer:

Question 6

Not yet answered

Marked out of 4.00

Flag question

Using Mil-Std-105E (ANSI/ASQ Z1.4), find the appropriate single sampling plan for a lot size of 15,000, under inspection level S-4, tightened inspection, and an AQL=4.0

Part 2: Acceptance number c =

Answer:

Question 7

Not yet answered

Marked out of 4.00

Flag question

A particular quality characteristic of a product has a single lower specification of 1.2 units. It is desired to use variables sampling to sentence production batches. Using the k method (procedure 1)

Part 1 Design a sampling plan for the situation where s is unknown and p_1=0.01, p_2=0.07, a =0.05, b =0.10

Question 1: n = ?

Answer:

Question 8

Not yet answered

Marked out of 4.00

Flag question

Question 2: What is the k for the variables sampling plan?

k=?

Answer:

Question 9

Not yet answered

Marked out of 4.00

Flag question

Variables Sampling Continued

For the variables sampling plan, suppose that a sample of the appropriate size was taken and resulted in an average = 1.74, with s=.33. Should this batch be accepted or rejected?

Select one:

- a. Accept
- b. Reject
- c. Take another sample

Question 10

Not yet answered

Marked out of 3.00

Flag question

The following ANOVA table was derived from an analysis if a single factor experiment. Complete the table and determine if there the factor has a statistically significant effect at the 95% confidence level.

Source	DF	SS	MS	F
Factor	3	65.58	?b	?d
Error	?a	120.48	?c	
Total	19	186.06		

Part a. DF Error=

Answer:

Question 11

Not yet answered

Marked out of 3.00

Flag question

Source	DF	SS	MS	F
Factor	3	65.58	?b	?d
Error	?a	120.48	?c	
Total	19	186.06		

Part b. MS Factor=

Answer:

Question 12

Not yet answered

Marked out of 3.00

Flag question

Source	DF	SS	MS	F
Factor	3	65.58	?b	?d
Error	?a	120.48	?c	
Total	19	186.06		

Part c. MS Error=

Answer:

Question 13

Not yet answered

Marked out of 3.00

Flag question

Source	DF	SS	MS	F
Factor	3	65.58	?b	?d
Error	?a	120.48	?c	
Total	19	186.06		

Part d. F Ratio=

Answer:

Question 14

Not yet answered

Marked out of 3.00

Flag question

Source	DF	SS	MS	F
Factor	3	65.58	?b	?d
Error	?a	120.48	?c	
Total	19	186.06		

Part E. Does the factor have a statistically significant effect on the response at the 95% confidence level?

Select one:

- a. Yes
- b. No

Question 15

Not yet answered

Marked out of 4.00

Flag question

3 Part Question:

A process is in statistical control with X bar bar =97 and S bar =2.5 . The control chart uses n=4. If the specification limits are 90-110,

Part A: Estimate the potential capability of the process

Answer:

Question 16

Not yet answered

Marked out of 4.00

Flag question

3 Part Question:

A process is in statistical control with X bar bar =97 and S bar =2.5 . The control chart uses n=4. If the specification limits are 90-110,

Part B: Estimate the actual capability of the process Cpk

Answer:

Question 17

Not yet answered

Marked out of 4.00

Flag question

3 Part Question:

A process is in statistical control with X bar bar =97 and S bar =2.5 . The control chart uses n=4. If the specification limits are 90-110,

Part C: How much less % nc would be expected if the process were centered?

Answer:

Question 18

Not yet answered

Marked out of 3.00

Flag question

A Gage R&R Study was carried out to evaluate a QC test method. The results of the study are shown in the table below. Gage R&R

	operator 1					operator 2				
part	meas 1	meas 2	meas 3	xbar	R	meas 1	meas 2	meas 3	xbar	R
1	44.3	39.8	45	43.03	5.2	41.9	40.2	45	42.37	4.8
2	41.1	43	46.3	43.47	5.2	41.1	40.1	44.8	42.00	4.7
3	40	39.3	43.2	40.83	3.9	38.5	40.5	41.1	40.03	2.6
4	39.9	43.6	45.3	42.93	5.4	39.7	42.6	39.5	40.60	3.1
5	44.6	41	43	42.87	3.6	42.1	38.4	42.2	40.90	3.8
			xdoublebar-1	42.63				xdoublebar-2	41.18	
			Rbar-1	4.66				Rbar-2	3.80	

A. Calculate the Repeatability sd.

Answer:

Question 19

Not yet answered

Marked out of 3.00

Flag question

A Gage R&R Study was carried out to evaluate a QC test method. The results of the study are shown in the table below.

	operator 1					operator 2				
part	meas 1	meas 2	meas 3	xbar	R	meas 1	meas 2	meas 3	xbar	R
1	44.3	39.8	45	43.03	5.2	41.9	40.2	45	42.37	4.8
2	41.1	43	46.3	43.47	5.2	41.1	40.1	44.8	42.00	4.7
3	40	39.3	43.2	40.83	3.9	38.5	40.5	41.1	40.03	2.6
4	39.9	43.6	45.3	42.93	5.4	39.7	42.6	39.5	40.60	3.1
5	44.6	41	43	42.87	3.6	42.1	38.4	42.2	40.90	3.8
			xdoublebar-1	42.63				xdoublebar-2	41.18	
			Rbar-1	4.66				Rbar-2	3.80	

B. Calculate the Reproducibility sd.

Answer:

Question 20

Not yet answered

Marked out of 3.00

Flag question

Given a calculated gage R&R variance of 7.9,

If the specifications for this product are LSL=20 and USL=60, calculate the precision-to-tolerance (P/T) ratio based on the natural tolerance range of the gage variability.

Select one:

- a. 42.2%
- b. 77.9%
- c. 5.7%
- d. 98.7%

Question 21

Not yet answered

Marked out of 5.00

Flag question

A company uses an acceptance sampling plan whereby for each lot of raw material a random sample of n=20 is tested. The lot is accepted if 1 or fewer of the samples are defective. Use Minitab or an excel template to calculate the OC curve for the n=20, c=1 plan.

Note: use a type B OC curve which uses a Binomial distribution.

A. From the OC curve, what lot percent defective would be accepted approximately 95% of the time. (This generally is considered the AQL of the plan)

Note 2: Questions asking for AQL in terms of a percent. EG if your answer was p=0.05 proportion defective then enter 5 as your answer.

Answer:

Question 22

Not yet answered

Marked out of 5.00

Flag question

A company uses an acceptance sampling plan whereby for each lot of raw material a random sample of n=20 is tested. The lot is accepted if 1 or fewer of the samples are defective. Use Minitab or an excel template to calculate the OC curve for the n=20, c=1 plan.

Note: use a type B OC curve which uses a Binomial distribution.

A. From the OC curve, what lot percent defective would be rejected approximately 90% of the time. (This generally is considered the LTPD of the plan)

Answer:

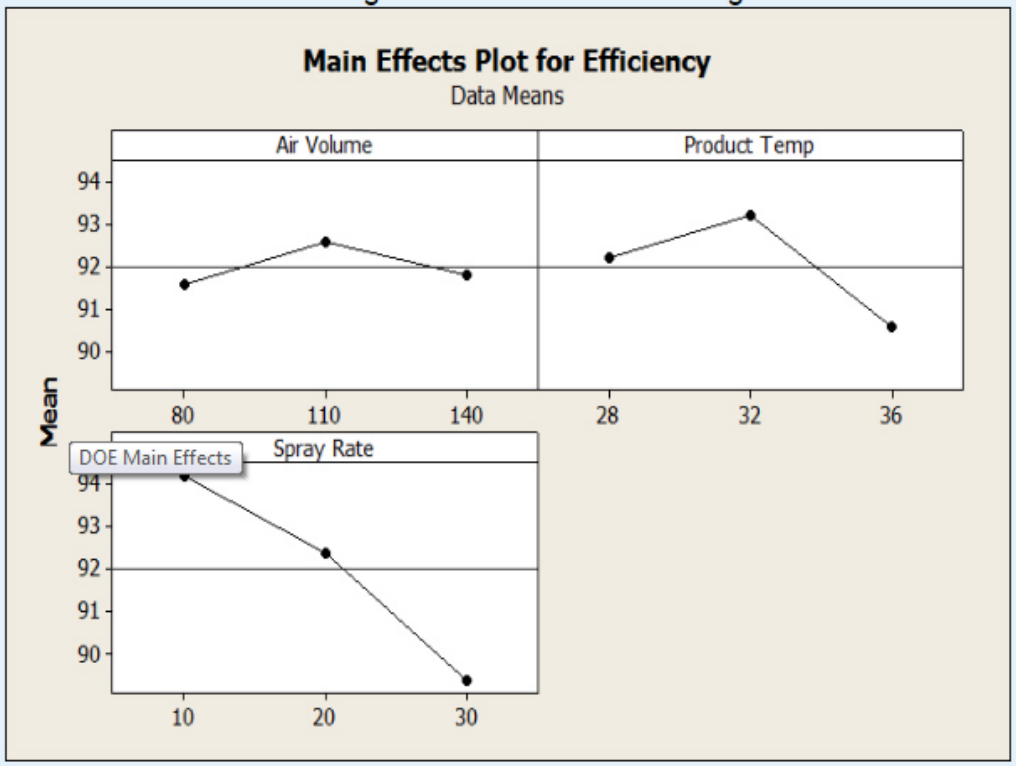
Question 23

Not yet answered

Marked out of 5.00

Flag question

A three level factorial design was carried out to evaluate the effects of 3 factors on two responses. Evaluate the Main Effects plots and determine which settings would be selected if the goal was to maximize efficiency.



Select one:

- a. Air Volume = 140, Product Temp = 36, Spray Rate = 30
- b. Air Volume = 110, Product Temp = 32, Spray Rate = 30
- c. Air Volume = 140, Product Temp = 36, Spray Rate = 10
- d. Air Volume = 80, Product Temp = 28, Spray Rate = 20
- e. Air Volume = 110, Product Temp = 32, Spray Rate = 10
- f. Air Volume = 140, Product Temp = 32, Spray Rate = 20
- g. Air Volume = 80, Product Temp = 36, Spray Rate = 30

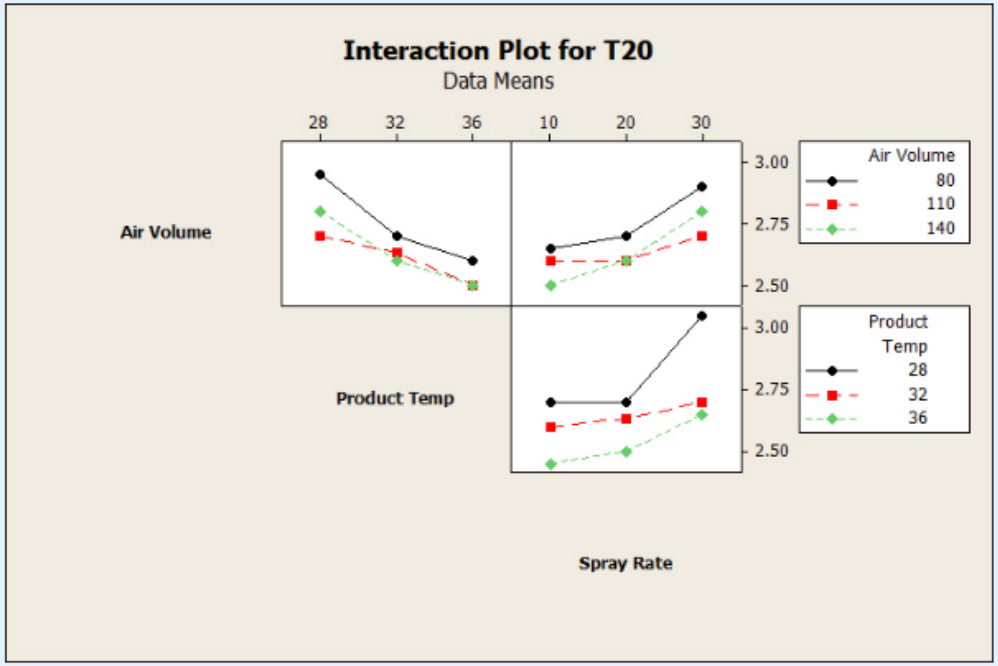
Question 24

Not yet answered

Marked out of 5.00

Flag question

A three level factorial design was carried out to evaluate the effects of 3 factors on two responses. Evaluate the interaction plots and determine which settings would be selected if the goal was to minimize T20.



Select one:

- a. Low Air Volume, High Product Temp, Low Spray Rate
- b. Low Air Volume, High Product Temp, High Spray Rate
- c. High Air Volume, Low Product Temp, High Spray Rate
- d. High Air Volume, High Product Temp, Low Spray Rate