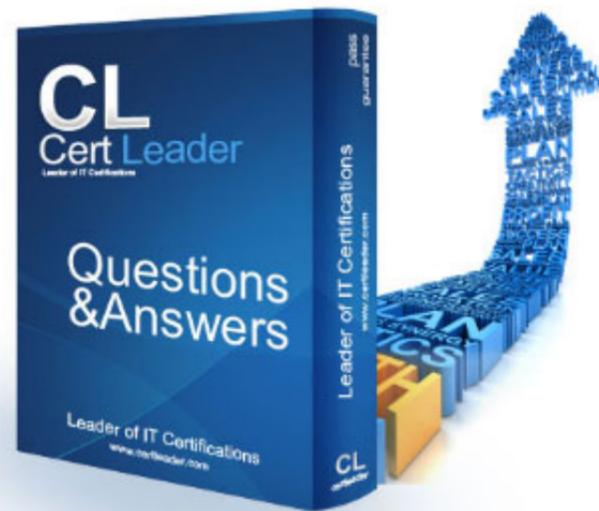


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NEW QUESTION 1

- (Topic 1)

Deming called the technique of studying a sample to gain understanding of the distribution of a population an “enumerative study.” His main objection to these studies was:

- A. they are too difficult to perform correctly
- B. they require extensive use of computers
- C. they assume a stable distribution
- D. random samples are expensive to obtain
- E. these studies have a high probability of Type II error

Answer: C

NEW QUESTION 2

- (Topic 1)

The management team in the above problem assigns each goal a numerical value designating its importance. The “bulls eyes,” circles and triangles are replaced by the values 3, 2 and 1 respectively. Entries are made in each box by multiplying the 3, 2 or 1 by the goal value. The importance of each activity is calculated by adding the entries in its row.

	#1 (5)	#2 (8)	#3 (2)	Total
Activity #1	3 (15)			45
Activity #1		1 (8)	2 (4)	12
Activity #1	2 (10)	3 (24)		34
etc.				

- A. Affinity diagram
- B. Inter-relationship digraph
- C. Tree diagram
- D. Process decision program chart
- E. Matrix diagram
- F. Prioritization matrix

Answer: F

NEW QUESTION 3

- (Topic 1)

A population is bimodal. One hundred samples of size 30 are randomly collected and the 100 sample means are calculated. The distribution of these sample means is:

- A. bimodal
- B. approximately exponential
- C. approximately Poisson
- D. approximately normal
- E. approximately uniform

Answer: D

NEW QUESTION 4

- (Topic 1)

	size			
	.500	.625	.750	.875
Nut	146	300	74	41
Washer	280	276	29	32
Bolt	160	214	85	55

This table displays the inventory of fasteners in a storage cabinet. An item is selected at random from the fastener cabinet. Find the approximate probability it is a 1/2 inch bolt.

- A. .65
- B. .30
- C. .09
- D. .35
- E. none of the above

Answer: C

NEW QUESTION 5

- (Topic 1)

Find the value of (1) in the ANOVA table. Assume:

$$\alpha = 0.10:$$

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
Error	2.1	4	(13)			

- A. 16.4
- B. 3.2
- C. 18.6
- D. 23.2
- E. 4.54
- F. 12.2
- G. 0.525
- H. 2.82
- I. 1.48
- J. 35.4
- K. $0.10 < P < 1$
- L. $0.05 < P < 0.10$
- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: I

NEW QUESTION 6

- (Topic 1)

A random sample of 2500 printed brochures is found to have a total of three ink splashes. The rate of ink splashes in PPM is:

- A. $1,000,000 \div 2500 \times 3$
- B. $2500 \div 1,000,000 \times 3$
- C. $3 \div 2500 \times 1,000,000$
- D. $3 \times 2500 \div 1,000,000$

Answer: C

NEW QUESTION 7

- (Topic 1)

The following data were collected on the diameters of turned shafts: 2.506 2.508 2.505 2.505. These values are: I. Attribute data II. Discrete data III. Variables data IV. Continuous data

- A. I and II A stable, normally distributed process with specification 3.50 .03 has = = .016. What percent of the production violates specification?
- B. I only
- C. II only
- D. I and IV
- E. III and IV

Answer: E

NEW QUESTION 8

- (Topic 1)

	size			
	.500	.625	.750	.875
Nut	146	300	74	41
Washer	280	276	29	32
Bolt	160	214	85	55

This table displays the inventory of fasteners in a storage cabinet. An item is selected at random from the fastener cabinet. Find the approximate probability it is larger than 1/2.

- A. .35
- B. .65
- C. .1106
- D. .47
- E. none of the above

Answer: B

NEW QUESTION 9

- (Topic 1)
SWOT is an acronym for:

- A. strengths, weaknesses, opportunities, threats
- B. statistics without tables
- C. sensory Weibull ordinal tools
- D. success yields optimal teams
- E. none of the above

Answer: A

NEW QUESTION 10

- (Topic 1)
A team wants a technique for obtaining a large number of possible reasons for excess variation in a dimension. They should use:

- A. written and diagrammed work instructions
- B. flow charts and process maps
- C. cause and effect diagrams
- D. Pareto chart
- E. relationship matrix

Answer: C

NEW QUESTION 10

- (Topic 1)
= 0.05 A machine tool vender wants to sell an injection molding machine. The current machine produces 3.2% defectives. A sample of 1100 from the vender 's machine has 2.9% defective. Do these numbers indicate that the proposed machine has a lower rate of defectives?

- A. yes
- B. no

Answer: A

NEW QUESTION 12

- (Topic 1)
 $P(A) = .42$, $P(B) = .58$, $P(A \& B) = .10$ Find $P(A \text{ or } B)$.

- A. .90
- B. 1.00
- C. .24
- D. none of the above

Answer: A

NEW QUESTION 14

- (Topic 1)
Find the value of (3) in the ANOVA table. Assume:

$\alpha = 0.10$:

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
Error	2.1	4	(13)			

- A. 16.4
- B. 3.2
- C. 18.6
- D. 23.2
- E. 4.54
- F. 12.2
- G. 0.525
- H. 2.82
- I. 1.48
- J. 35.4
- K. $0.10 < P < 1$
- L. $0.05 < P < 0.10$
- M. $0.01 < P < 0.05$
- N. $0.005 < P < 0.01$
- O. $0 < P < 0.005$

Answer: E

NEW QUESTION 16

-(Topic 1)

The Toronto plant produces appliances in the following distribution: Type A 23% Type B 42% Type C 35% A random sample of 300 appliances from the Texas plant has the following distribution: Type A 73 Type B 111 Type C 116 Is the distribution of appliances at the Texas plant the same as that at the Toronto plant?

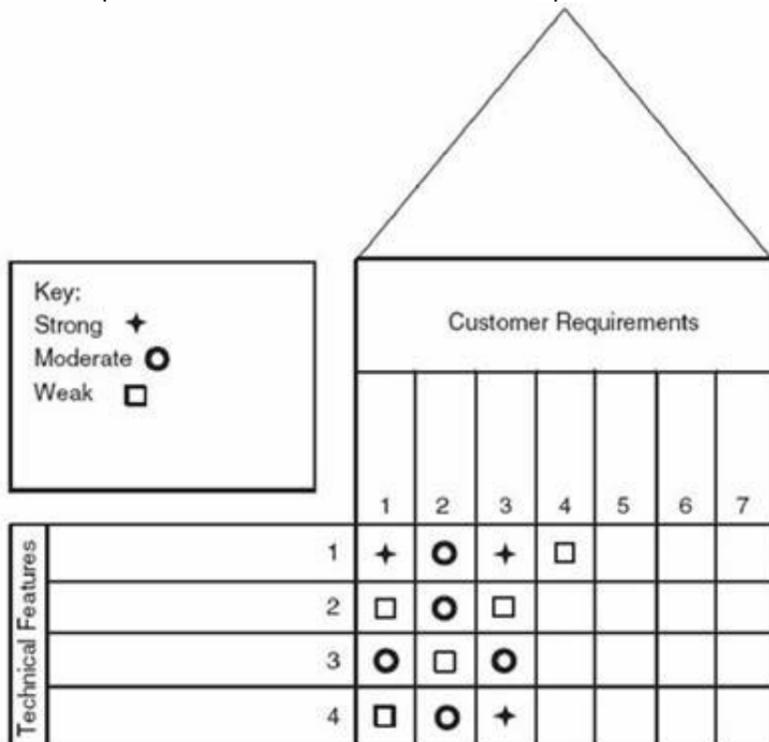
- A. yes
- B. no

Answer: B

NEW QUESTION 20

-(Topic 1)

Customer requirement #3 has a _____ relationship with technical feature #3.



- A. strong
- B. moderate
- C. weak

Answer: B

NEW QUESTION 23

-(Topic 1)

The quality leader most associated with the concept of robustness:

- A. Juran
- B. Ishikawa

- C. Crosby
- D. Feigenbaum
- E. Taguchi
- F. none of the above

Answer: E

NEW QUESTION 28

- (Topic 1)

If DPU = 0.022, the RTU is approximately:

- A. 0.022
- B. 0.078
- C. 0.0022
- D. 0.98
- E. 0.098
- F. 0.0098

Answer: D

NEW QUESTION 32

- (Topic 1)

An engineer wants to try two hardening ovens to see whether they have different hardness scores. She cuts 8 pieces of bar stock in half, putting half of each in oven A and the other half in oven B. The following data are collected: Do the data indicate that the ovens have different average scores? Assume differences are normally distributed.

Piece #	1	2	3	4	5	6	7	8
Oven A	20.3	19.7	21.4	22.0	21.6	21.0	20.8	20.8
Oven B	19.7	20.0	20.1	21.2	21.4	20.7	21.0	19.6

- A. yes
- B. no

Answer: B

NEW QUESTION 34

- (Topic 1)

A team wants a technique for displaying the connection between various customer needs and various features on a product. They should use:

- A. written and diagrammed work instructions
- B. flow charts and process maps
- C. cause and effect diagrams
- D. Pareto chart
- E. relationship matrix

Answer: E

NEW QUESTION 35

- (Topic 1)

According to the Central Limit Theorem:

- A. the median and the mean have the same value in a symmetric distribution
- B. the mode of a normal distribution is also the mean
- C. the mean of an exponential distribution is smaller than the median
- D. the mean, median and mode of a normal distribution all have the same value
- E. none of the above

Answer: E

NEW QUESTION 36

- (Topic 1)

Customer segmentation refers to:

- A. dividing a particular customer into parts that are more easily understood
- B. grouping customers by one or more criteria
- C. maintaining secure customer listings to minimize communication among them
- D. eliminating or "cutting off" customers with poor credit history

Answer: B

NEW QUESTION 37

- (Topic 1)

There are 14 different defects that can occur on a completed time card. The payroll department collects 328 cards and finds a total of 87 defects. DPMO =:

- A. $87 \div 328$
- B. $87 \div (328 \times 14)$
- C. $14 \div 87$
- D. $87 \div 14 \times 1,000,000$
- E. $328 \div 87$
- F. $87 \times 1,000,000 \div (14 \times 328)$

Answer: F

NEW QUESTION 38

- (Topic 1)

Find Cp and Cpk.

- A. 1.21 and .85
- B. .85 and 1.21
- C. .35 and .63
- D. .63 and .42
- E. none of the above

Answer: D

NEW QUESTION 39

- (Topic 1)

A team studies a coil steel banding process and makes five changes resulting in productivity improvements of 2%, 2.8%, 2.4%, 2% and 3% respectively. These improvements are best described by which approach to problem solving?

- A. 5S
- B. Poka yoke
- C. Kaizen
- D. PDCA
- E. Re-engineering

Answer: C

NEW QUESTION 41

- (Topic 1)

$P(A) = .42$, $P(B) = .58$ $P(A \& B) = .10$. Are A and B mutually exclusive (or disjoint)?

- A. yes
- B. no

Answer: B

NEW QUESTION 42

- (Topic 1)

A stable, normally distributed process with specification $3.50 \pm .03$ has $\bar{x} = 3.51$ and $\sigma = .016$. What percent of the production violates specification?

- A. 16.43%
- B. 12.62%
- C. 18.58%
- D. 11.18%

Answer: D

NEW QUESTION 43

- (Topic 1)

$\sigma = 0.05$ In problem 1, do the data indicate that the population for machine A has a larger standard deviation?

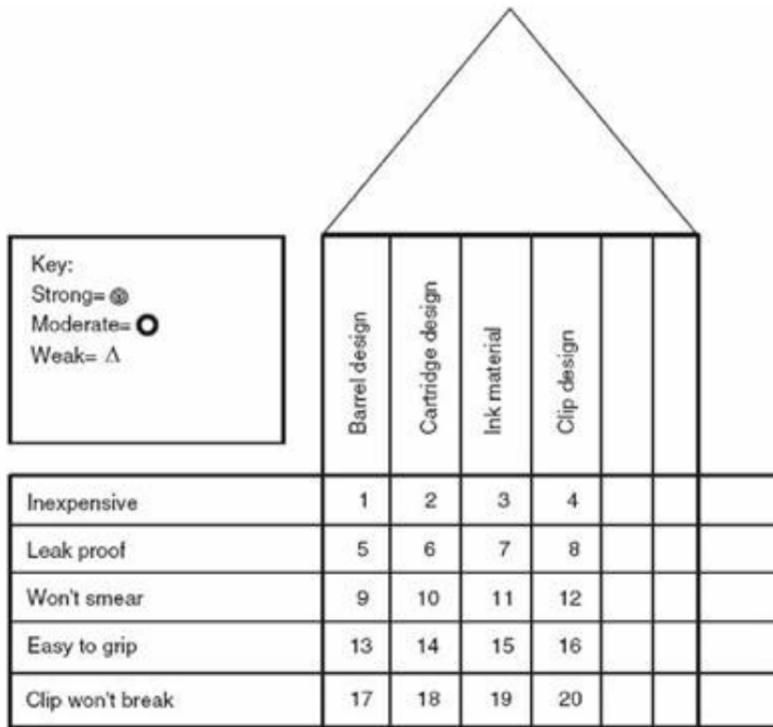
- A. yes
- B. no

Answer: B

NEW QUESTION 45

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 4?



- A.
- B.
- C.

A. none of the above

Answer: B

NEW QUESTION 48

- (Topic 2)

An x-bar and R chart has four part measurements per sample. The control limits on the averages chart are 2.996 and 3.256. Assume the process data form a normal distribution. What is the probability that the next part measurement falls outside the control limits?

- A. 0.00135
- B. 0.0027
- C. 0.0681
- D. 0.1362
- E. 0.2724
- F. none of the above

Answer: D

NEW QUESTION 51

- (Topic 2)

The following is a set of individual measurements: 3 5 4 5 6 3 4 3 2 4 5 6 5 7 6 4 5 5 8 7 6 6 7 7 4. Find the control limits for the individuals chart.

- A. .7 and 11.2
- B. 1.6 and 8.6
- C. 2.7 and 7.5
- D. none of the above

Answer: D

NEW QUESTION 56

- (Topic 2)

An assembly line has 3 x 3 squares painted behind each person. Signs indicate the parts and quantities that should be placed there. This is an example of:

- A. visual factory
- B. kanban
- C. poka-yoke
- D. standard work
- E. set up time reduction (SMED)

Answer: B

NEW QUESTION 57

- (Topic 2)

Find the upper control limit for a range chart if n = 4 and the average range is 2.282.

- A. 2.282
- B. 4.564
- C. 5.208
- D. 3.423

Answer: C

Explanation:

The following formula is for calculating upper control limit for a range chart n = 4

$$UCL_{\bar{R}} = D_4 \bar{R}$$

$$= 2.282 \times 2.282 = 5.208$$

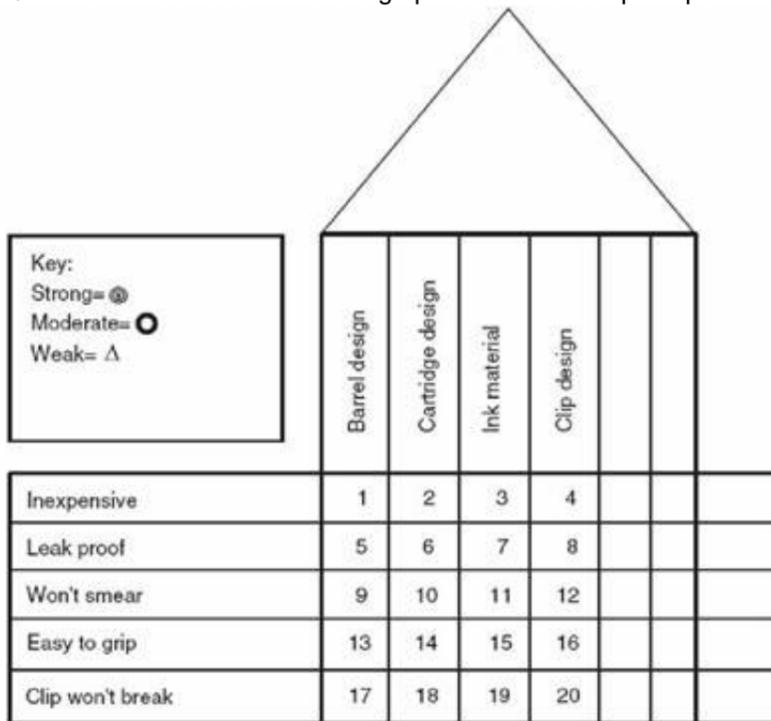
Use the following constants (D4) in the computation

n	D ₄	n	D ₄	n	D ₄
2	3.267	7	1.924	12	1.717
3	2.574	8	1.864	13	1.693
4	2.282	9	1.816	14	1.672
5	2.114	10	1.777	15	1.653
6	2.004	11	1.744		

NEW QUESTION 59

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 1?



- A. none of the above

Answer: B

NEW QUESTION 62

- (Topic 2)

When Tricia empties a box of capacitors she places it at a designated spot on her work table. Sam notices the empty box and brings a full box of capacitors from the stock room. This is an example of:

- A. visual factory
- B. kanban
- C. poka-yoke
- D. standard work
- E. set up time reduction (SMED)

Answer: B

NEW QUESTION 64

- (Topic 2)

The word takt is closest to the theory of constraints word:

- A. drum
- B. buffer
- C. rope
- D. constraint

Answer: A

NEW QUESTION 67

- (Topic 2)
The null hypothesis should be:

- A. rejected
- B. not rejected
- C. accepted

Answer: A

NEW QUESTION 70

- (Topic 2)
Find the value of (11) in the ANOVA table. Assume:

$\alpha = 0.10$:

ANOVA Table

Source	SS	df	MS	F ratio	F crit	P-value
x	1.48	1	(1)	(2)	(3)	(4)
Y	18.6	1	(5)	(6)	(7)	(8)
xxY	12.2	1	(9)	(10)	(11)	(12)
Error	2.1	4	(13)			

A. Choices Not available (but this Question Answer E)

Answer: A

NEW QUESTION 74

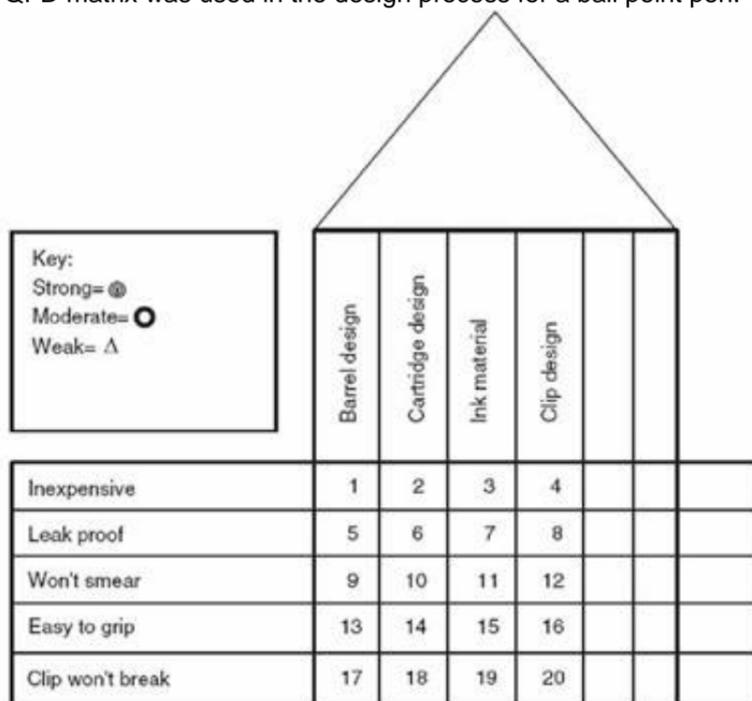
- (Topic 2)
A process shows the following number of defectives. Each sample size for this process is 85. 3 8 2 7 7 6 8 8 9 5 Find the control limits.

- A. none and 13.5
- B. 12.6 and 25.2
- C. none and 25.2
- D. none of the above

Answer: A

NEW QUESTION 76

- (Topic 2)
This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 6?



- A.
- B.
- C.
- A. none of the above

Answer: B

NEW QUESTION 80

- (Topic 2)
If the value of the test statistic had been 0.185, what action should have been taken regarding the null hypothesis?

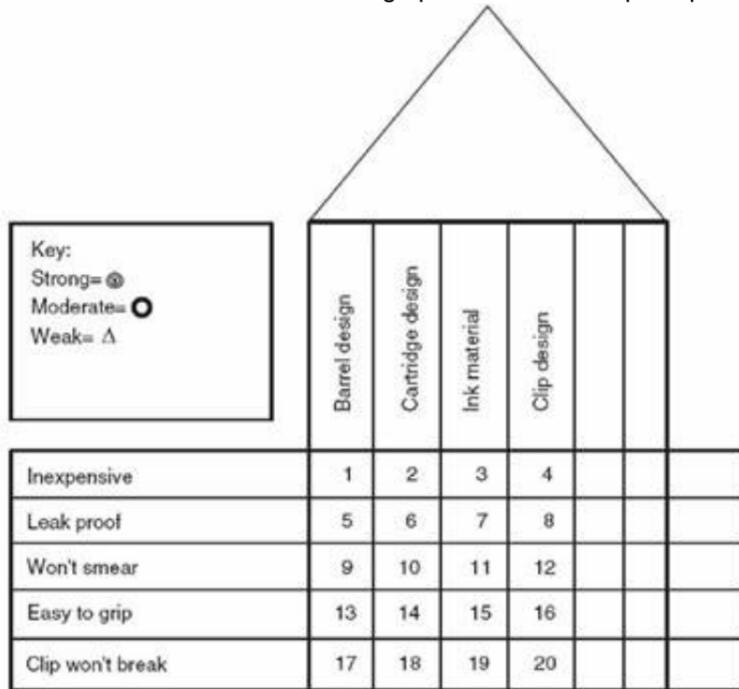
- A. rejected
- B. accepted
- C. none of the above
- D. all of the above

Answer: C

NEW QUESTION 84

- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 14?



- A.
- B.
- C.
- A. none of the above

Answer: D

NEW QUESTION 86

- (Topic 2)

The mean, median and mode of a distribution have the same value. What can be said about the distribution:

- A. it is exponential
- B. it is normal
- C. it is uniform
- D. none of the above

Answer: D

NEW QUESTION 87

- (Topic 2)

Dr. Joseph M. Juran:

- A. lectured in Japan after World War II
- B. was an author of several books in the US
- C. lectured widely in the US
- D. is considered an expert in the quality field
- E. all of the above
- F. none of the above

Answer: E

NEW QUESTION 91

- (Topic 2)

An experiment is conducted by checking the effect that three different pressures have on the surface appearance of a product. Ten items are produced at each of the three pressures. The number of replications, factors and levels are:

- A. 10, 3, 2
- B. 10, 2, 3
- C. 2, 3, 3
- D. 10, 1, 3
- E. 10, 3, 1

Answer: D

NEW QUESTION 96

- (Topic 2)

A robust design is one which:

- A. has high reliability
- B. has low maintenance frequency
- C. is simple to manufacture
- D. is resistant to varying environmental conditions

Answer: D

NEW QUESTION 98

- (Topic 2)

A team has been asked to reduce the occurrence of a particular defect. They begin by brainstorming all possible causes using a:

- A. matrix diagram
- B. cause and effect diagram
- C. process decision program chart
- D. affinity diagram
- E. activity network diagram
- F. tree diagram
- G. prioritization matrix
- H. matrix diagram
- I. interrelationship digraph

Answer: B

NEW QUESTION 103

- (Topic 2)

Data are collected in xy pairs and a scatter diagram shows the points are grouped very close to a straight line that tips down on its right hand end. A reasonable value for the coefficient of correlation is:

- A. .8
- B. -.9
- C. 1
- D. 1.3
- E. -1.8

Answer: C

NEW QUESTION 108

- (Topic 2)

The following is a set of individual measurements: 3 5 4 5 6 3 4 3 2 4 5 6 5 7 6 4 5 5 8 7 6 6 7 7 4
Find the control limits for the range chart.

- A. none and 4.2
- B. none and 5.1
- C. 0.2 and 1.5
- D. none of the above

Answer: A

NEW QUESTION 110

- (Topic 2)

A team has completed a brainstorming session that has generated a large number of ideas. The team needs to organize these ideas in natural groupings. Which tool is most appropriate?

- A. matrix diagram
- B. cause and effect diagram
- C. process decision program chart
- D. affinity diagram
- E. activity network diagram
- F. tree diagram
- G. prioritization matrix
- H. matrix diagram
- I. interrelationship digraph

Answer: D

NEW QUESTION 113

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