ASQ

Exam Questions CSSBB

Certified Six Sigma Black Belt

NEW QUESTION 1
- (Topic 1)
Find the value of (8) 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

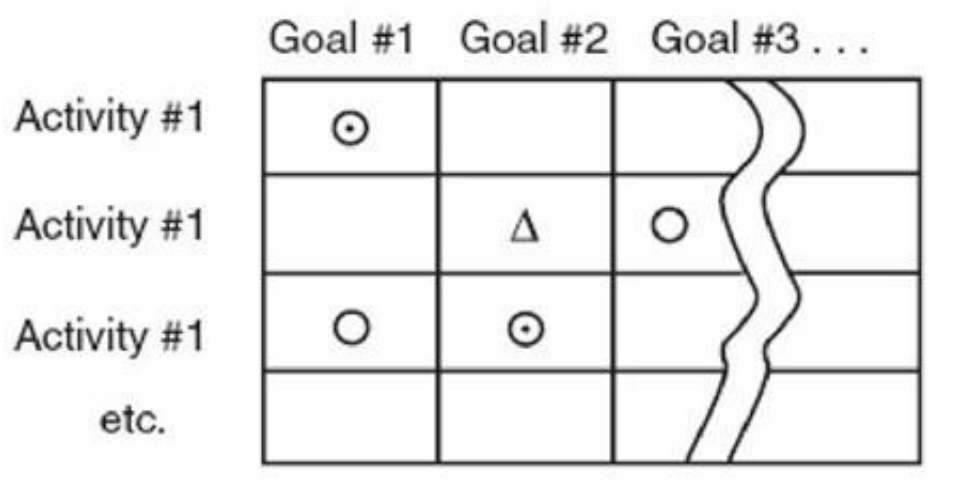
Answer: O

NEW QUESTION 2
- (Topic 1)
In a series of linked processes and associated feedback loops the product or service flows _____ and the information flows _____ .

A. rapidly, slower
B. downstream, upstream
C. evenly, digitally
D. sooner, later
E. to the customer, from the supplier
F. none of the above

Answer: B

NEW QUESTION 3
- (Topic 1)
A management team lists nine goals across the top of a rectangle and 15 activity initiatives along the left hand side of the rectangle. If one of the activities strongly supports one of the goals a circle is placed in the box where that activity's row intersects the goal's column. If the activity's support is very strong a "bulls eye" is placed in the box and if the support is weak a triangle is used. This best describes which problem solving tool?



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

Answer: E

NEW QUESTION 4
- (Topic 1)
A population of size 1,000,000 has mean 42 and standard deviation 6. Sixty random samples, each of size 15 are selected. According to the Central Limit

Theorem the distribution of the sixty sample means has a standard deviation of approximately:

A. 6
B. 6/42
C. 6/15
D. 6/ 15
E. none of the above

Answer: D

NEW QUESTION 5
- (Topic 1)
Is it safe to assume that the interaction effects are negligible?

Run #	A	B	Ave. Response
1	–	–	129
2	–	+	133
3	+	–	86
4	+	+	80

A. yes
B. no
C. probably

Answer: C

NEW QUESTION 6
- (Topic 1)
If the probability that event A occurs is .51, the probability that event B occurs is .64 and events A and B are statistically independent then:

A. A and B are mutually exclusive
B. the probability that both A and B occur is 0.3264
C. A and B can’t both occur
D. the probability that A occurs is 1-(probability that B occurs)
E. A and B have different standard deviations

Answer: B

NEW QUESTION 7
- (Topic 1)
A team wants a technique for doing an initial study of a process that not every team member is familiar with. 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: B

NEW QUESTION 8
- (Topic 1)
A team is investigating ways to reduce power outages. They determine that an outage can occur in only three ways: grid failure, local transformer failure or local overload. They then investigate each of these three events for possible causes, etc. They draw a diagram that “fans out” using the power outage as the handle of the fan. These improvements are best described by which approach to problem solving?

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

Answer: C

NEW QUESTION 9
- (Topic 1)
A team wants a technique for determining and displaying priorities based on frequency of various defect types. 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: D

NEW QUESTION 10
- (Topic 1)
When comparing two vendors' machines it is found that a sample of 1000 parts from machine A has 23 defectives and a sample of 1300 parts from machine B has 36 defectives. Do the data indicate that machine B has a higher rate of defectives?

A. yes
B. no
C. all of the above

Answer: A

NEW QUESTION 10
- (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. DPU =

A. 87 ÷ 328
B. 87 ÷ (328 × 14)
C. 14 ÷ 87
D. 87 ÷ 14
E. 328 ÷ 87
F. 87 × 1,000,000 ÷ (14 × 328)

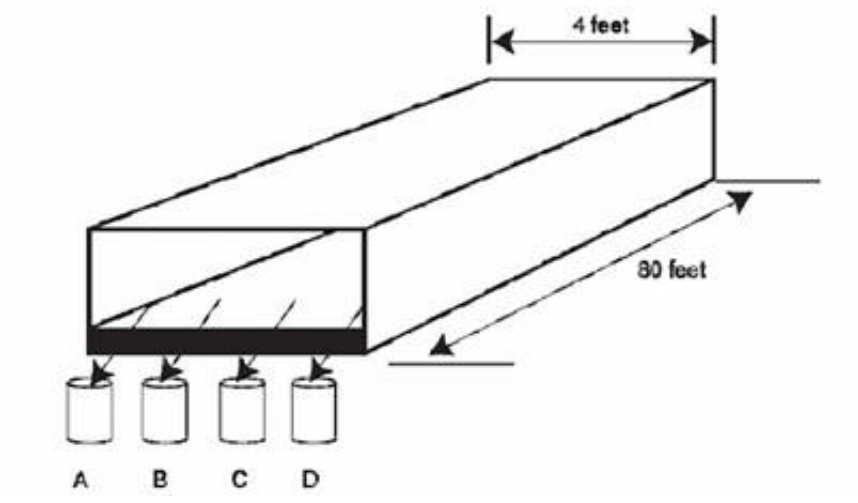
Answer: A

NEW QUESTION 12
- (Topic 1)
The Central Limit Theorem states that the distribution of sample means approximates a
normal distribution if:

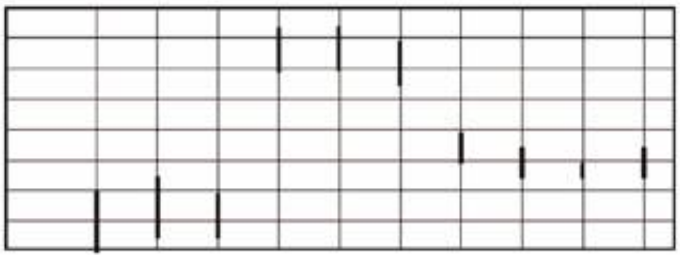
A. the population is normally distributed
B. the sample is normally distributed
C. the sample is randomly selected
D. the sample size is sufficiently large
E. the means are carefully calculated

Answer: D

NEW QUESTION 15
- (Topic 1)
SCENARIO A Six Sigma team is measuring the moisture content of corn starch as it leaves the conveyer belt of a dryer. They collect one sample four cups of starch at times indicated in the chart at fixed locations labeled A, B, C, and D across the end of the belt. See the diagram below.



After some more work on the dryer, additional data are collected which when plotted looks like this:



Which type of variation dominates?

A. within sample
B. sample to sample within the hour
C. hour to hour
D. none of the above

Answer: C

NEW QUESTION 18
- (Topic 1)
Calculate the main effect of factor A (i. e. A+ – A–).

Run #	A	B	Ave. Response
1	–	–	129
2	–	+	133
3	+	–	86
4	+	+	80

A. 46
B. 129
C. 83
D. –46
E. none of the above

Answer: E

NEW QUESTION 19
- (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 20
- (Topic 1)
If the probability that event A occurs is 0.51, the probability that event B occurs is 0.64 and that probability that both A and B occur is 0.23 then:

A. events A and B are complementary
B. events A and B are mutually exclusive
C. events A and B are supplementary
D. events A and B are not mutually exclusive
E. events A and B are statistically independent

Answer: D

NEW QUESTION 21
- (Topic 1)
A medicine with efficacy of .52 is given to five patients. Find the approximate probability that at least one of the patients is cured. (Hint: Use the binomial formula.)

A. .975
B. .480
C. .531
D. .416
E. none of the above

Answer: A

NEW QUESTION 22
- (Topic 1)
This table displays the inventory of fasteners in a storage cabinet. A bolt is selected at random from the fastener cabinet. Find the approximate probability it is size 7/8.

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

A. 11
B. .08
C. .09
D. .30
E. none of the above

Answer: A

NEW QUESTION 26
- (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

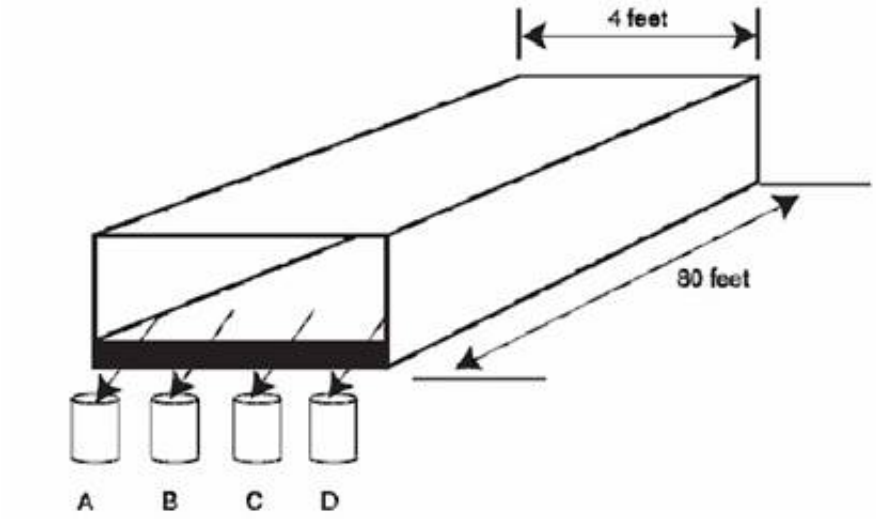
Answer: E

NEW QUESTION 29
- (Topic 1)
A team wants a technique for displaying the connection between various customer needs and various features on a product. They should use:

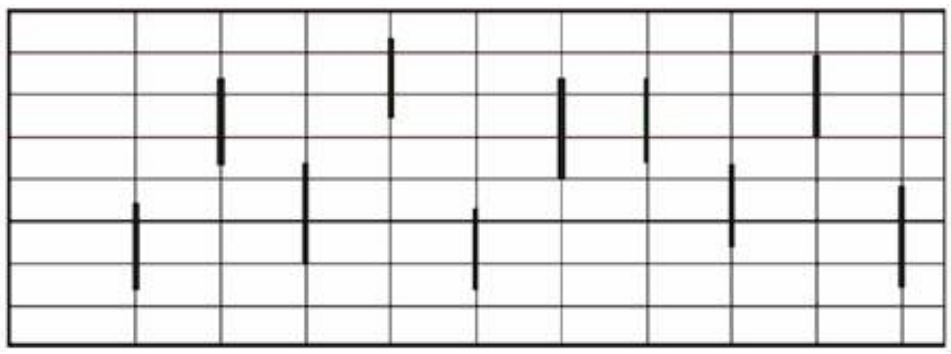
A. written and diagrammed work instructions
B. flow charts and process maps
C. cause and effect diagrams
D. Pareto chart
E. relationship matrix

Answer: E

NEW QUESTION 33
- (Topic 1)
SCENARIO A Six Sigma team is measuring the moisture content of corn starch as it leaves the conveyer belt of a dryer. They collect one sample four cups of starch at times indicated in the chart at fixed locations labeled A, B, C, and D across the end of the belt. See the diagram below.



After some work on the dryer, additional data are collected which when plotted looks like this:



Which type of variation dominates?

A. within sample
B. sample to sample within the hour
C. hour to hour
D. none of the above

Answer: B

NEW QUESTION 34
- (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 36
- (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 ÷ 328
B. 87 ÷ (328 × 14)
C. 14 ÷ 87
D. 87 ÷ 14 × 1,000,000
E. 328 ÷ 87
F. 87 × 1,000,000 ÷ (14 × 328)

Answer: F

NEW QUESTION 39
- (Topic 1)
Find the value of (2) 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: H

NEW QUESTION 44

- (Topic 1)
A stable, normally distributed process with specification 3.50 .03 has = 3.51 and = .016. What percent of the production violates specification?

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

Answer: D

NEW QUESTION 45
- (Topic 1)
= 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 47
- (Topic 1)
Find the value of (6) in the ANOVA table. Assume:

$\alpha = 0.10$

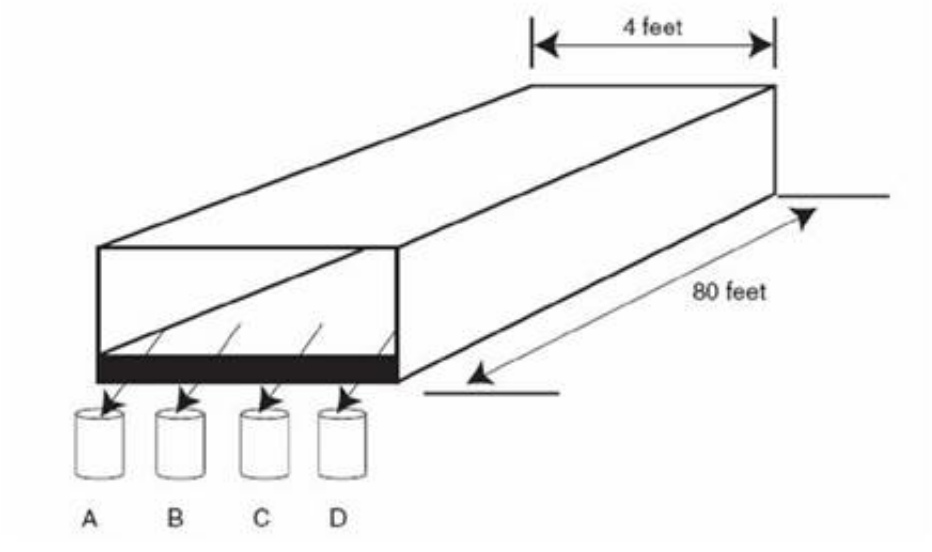
ANOVA Table

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

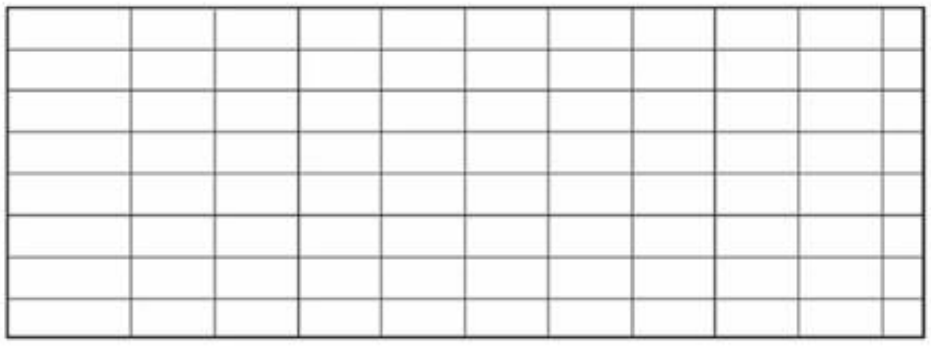
Answer: J

NEW QUESTION 51
- (Topic 1)
SCENARIO A Six Sigma team is measuring the moisture content of corn starch as it leaves the conveyer belt of a dryer. They collect one sample four cups of starch at times indicated in the chart at fixed locations labeled A, B, C, and D across the end of the belt. See the diagram below.



The data for a nine hour period are:

% moisture										
	12:00	12:10	12:20	4:00	4:10	4:20	8:00	8:10	8:20	8:40
A	12.0	14.2	12.9	14.1	12.5	13.8	14.4	13.0	14.2	14.3
B	15.0	15.2	15.6	15.0	13.8	15.4	15.8	16.0	15.2	15.3
C	12.3	14.8	13.2	13.2	14.9	14.0	14.5	15.3	14.0	16.0
D	12.6	12.2	14.0	12.6	13.0	14.0	13.1	14.8	13.8	12.9



Which type of variation dominates? (Hint: Plot the points on the graph above.)

A. within sample
B. sample to sample within the hour
C. hour to hour
D. none of the above

Answer: A

NEW QUESTION 53
- (Topic 1)
A project that lacks a clear definition of its scope and boundaries runs the risk of:

A. straying from the intended path
B. trying to solve unrelated problems
C. having difficulty in collecting baseline data
D. suffering morale problems
E. all the above
F. none of the above

Answer: E

NEW QUESTION 57
- (Topic 2)
An example of a project metric would be:

A. the decrease in defect occurrence
B. the decrease in product cost
C. the decrease in cycle time
D. all the above

Answer: D

NEW QUESTION 62
- (Topic 2)
Calculate the estimated variance of the population from which the following values have been randomly selected: 2.8 2.7 2.6 2.9 2.8 2.8 2.8:

A. .095
B. .009
C. .088
D. .008

Answer: A

Explanation:

The variance formula will be used for calculating the estimated variance of the given data. The formula is:
N = 7
$\bar{x}$
= 2.77
__(x-
)2

NEW QUESTION 66
- (Topic 2)
The distribution is:

A. symmetric
B. left skewed
C. right skewed
D. normal
E. uniform

Answer: C

NEW QUESTION 68
- (Topic 2)
A correct statement about the relationship between the terms parameter and statistic is:

A. a population statistic is more accurate than a parameter
B. a sample parameter is used to estimate a statistic
C. a sample statistic is used to estimate a population parameter
D. standard deviation calculations requires both statistics and parameters

Answer: C

NEW QUESTION 71
- (Topic 2)
Nominal Group Technique is used to:

A. help a group reach consensus
B. generate a group on new ideas
C. provide a consistent stable group leadership
D. provide a name for the group

Answer: A

NEW QUESTION 72
- (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

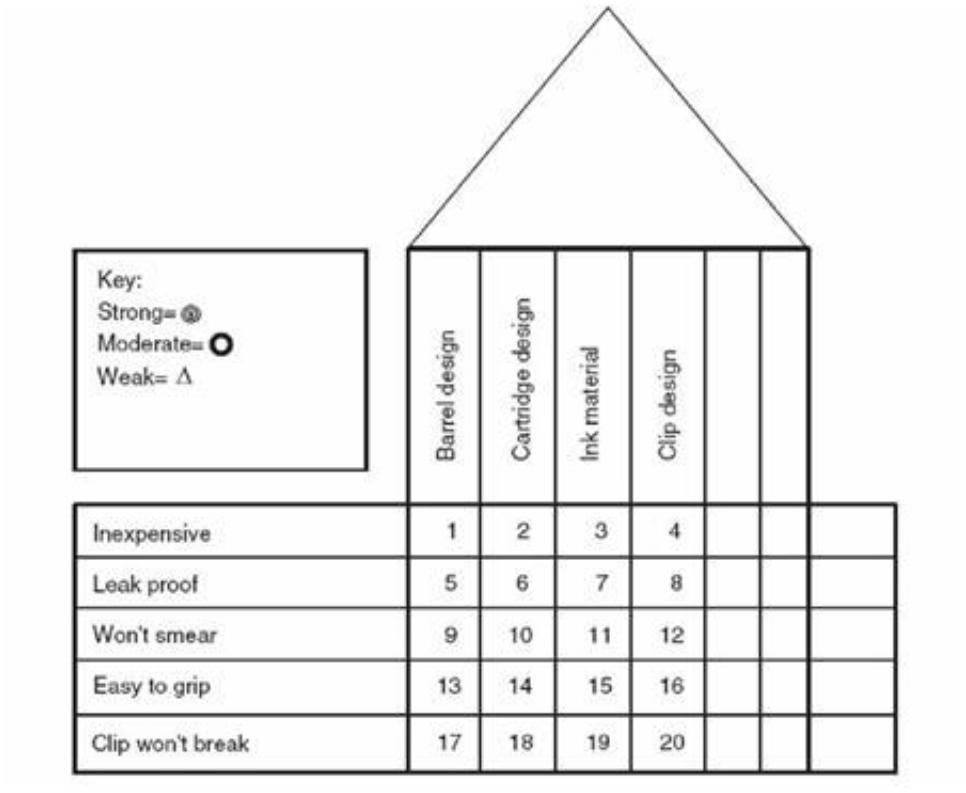
Answer: D

NEW QUESTION 76
- (Topic 2)
The critical value(s) is/are:

A. 1.645
B. 1.96
C. 1.645
D. 1.96

Answer: A

NEW QUESTION 81
- (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.
B.
C.

A. none of the above

Answer: B

NEW QUESTION 84
- (Topic 2)
At a particular time, three components are in parallel and each has a reliability of 0.98. What is the reliability of the system?

A. 0.98
B. 0.94
C. 0.37
D. 0.26
E. none of the above

Answer: E

NEW QUESTION 85
- (Topic 2)
If item A is more likely to be detected than item B which will have the highest Detection value?

A. item A
B. item B
C. cannot be determined

Answer: B

NEW QUESTION 86
- (Topic 2)
An important step in determining the VOC is:

A. establish viable or comprehensive process feedback loops
B. ascertain the principles that are values of the corporation
C. identify the customer
D. measure the virtual operating continuum potential
E. all of the above
F. none of the above

Answer: C

NEW QUESTION 87
- (Topic 2)
The null hypothsis should be:

A. rejected
B. not rejected
C. accepted

Answer: A

NEW QUESTION 90
- (Topic 2)

A process produced 1394 units. During this time 11 defects were detected. The Rolled Throughput Yield (RTU) is approximately:

A. 0.992
B. 7.89
C. 0.00789
D. 1.008
E. all of the above
F. none of the above

Answer: A

NEW QUESTION 94
- (Topic 2)
The overall tolerance for three components in series in an electrical circuit Is+ 10 . Assuming normal, stable, capable processes produce the components, use stack tolerance techniques to find a set of tolerances for the three components.

A. 3, 3 and 4 respectively
B. 7, 7 and 6 respectively
C. 8, 8 and 8 respectively
D. 10, 10 and 14 respectively

Answer: D

NEW QUESTION 98
- (Topic 2)
Calculate the main effect of factor A:

	A	B	Res.
1	–	–	20
2	–	+	30
3	+	–	40
4	+	+	50

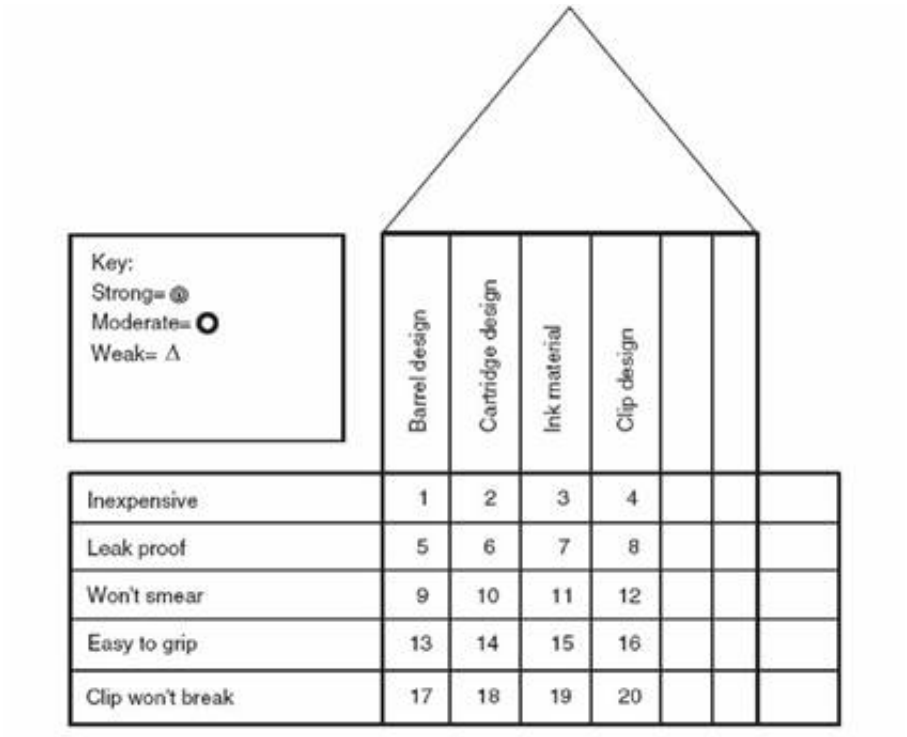
A. 20
B. 25
C. 30
D. 40
E. none of the above

Answer: A

Explanation:

A factorial experiment can be analyzed using ANOVA or regression analysis[citation needed]. It is relatively easy to estimate the main effect for a factor. To compute the main effect of a factor "A", subtract the average response of all experimental runs for which A was at its low (or first) level from the average response of all experimental runs for which A was at its high (or second) level.

NEW QUESTION 100
- (Topic 2)
This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 9?



A.
B.
C.

A. none of the above

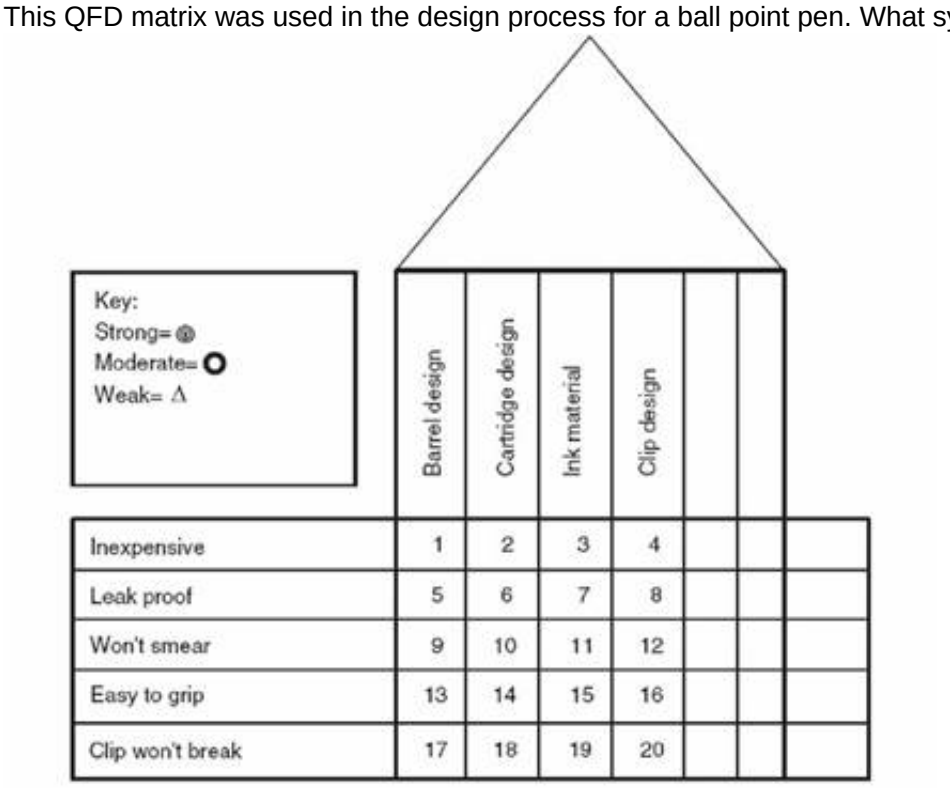
Answer: D

NEW QUESTION 101
- (Topic 2)
An advantage of using standard deviation rather than range for measuring dispersion of a large sample is that:

A. standard deviation has a simpler formula
B. calculators have a standard deviation key but not a range key
C. standard deviation uses information from each measurement
D. range calculations are not normally distributed

Answer: C

NEW QUESTION 102
- (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?

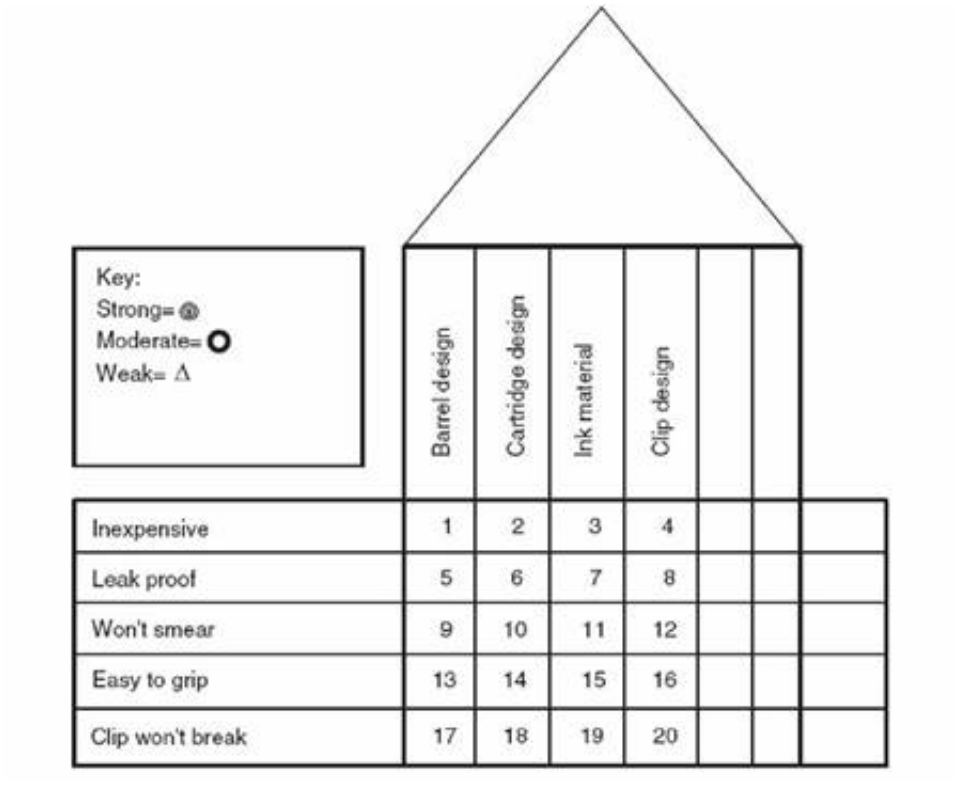


A.
B.
C.

A. none of the above

Answer: B

NEW QUESTION 105
- (Topic 2)
This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 5?



A.
B.
C.

A. none of the above

Answer: A

NEW QUESTION 110
- (Topic 2)
The diameters of 50 randomly selected shafts have a mean of 1.525 and standard deviation of 0.006. Find the 95% lower confidence limit for the population mean.

A. 1.523
B. 1.524
C. 1.525
D. 1.526
E. 1.527

Answer: A

Explanation:

n = 50 mean = 1.525
Standard deviation = 0.006 95% confidence interval = 1.96
$\overline{x}$
-z/2 /n
* 1.525-1.96(0.006/50)
* 1.525-0.00166=1.523

NEW QUESTION 114
- (Topic 2)
A Six Sigma project designed to solve a particular problem needs a definition/scope statement to help avoid:

A. going beyond the problem into other problems
B. failing to cover the entire problem
C. misunderstanding and disagreement between team members regarding problem boundaries
D. all of the above
E. none of the above

Answer: D

NEW QUESTION 115
- (Topic 2)
Dr. W. Edwards Deming:

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 118
- (Topic 2)

One of the approaches used by TRIZ is referred to as “removing the contradiction.” A project team is asked to determine how many coats of paint should be applied to a panel. In this case the contradiction is:

A. additional coats cost money but give a better finish
B. the customer wants an excellent finish at a low cost
C. the company wants to reduce costs but have an excellent finish

Answer: A

NEW QUESTION 120
- (Topic 2)
A set of data from a process has 8 readings per sample and 50 samples. The mean of the 50 sample means is 12.62. The mean of the 50 ranges is 0.18.Find the control limits for a median chart.

A. 12.52 and 12.72
B. 12.54 and 12.70
C. 0.02 and 0.33
D. none of the above

Answer: A

NEW QUESTION 124
- (Topic 2)
A complex system has many causes and effects. These may be illustrated on which of the following:

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: C

NEW QUESTION 129
- (Topic 2)
The test statistic is approximately:

A. 4.79
B. 6.71
C. 2.08
D. 5.44

Answer: A

NEW QUESTION 134
- (Topic 2)
A frequent cause of system sub optimization is:

A. optimizing individual processes
B. failing to draw a system flow chart
C. using data with outliers
D. failing to consider the normal distribution

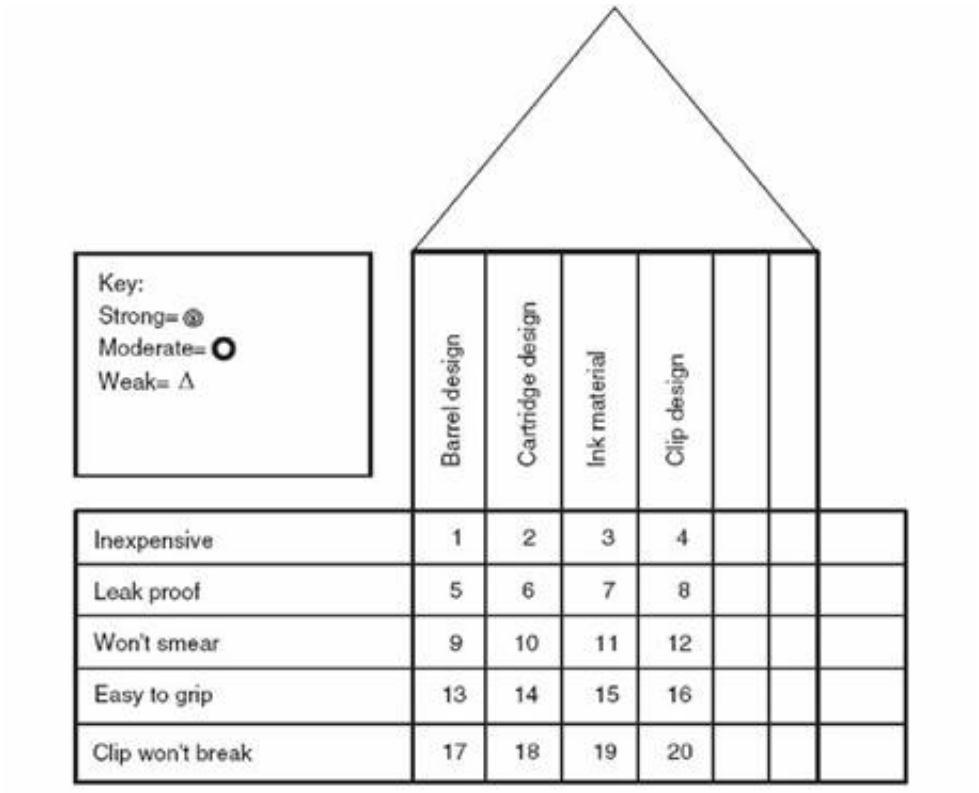
Answer: A

NEW QUESTION 135
- (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 137
- (Topic 2)
This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 10?

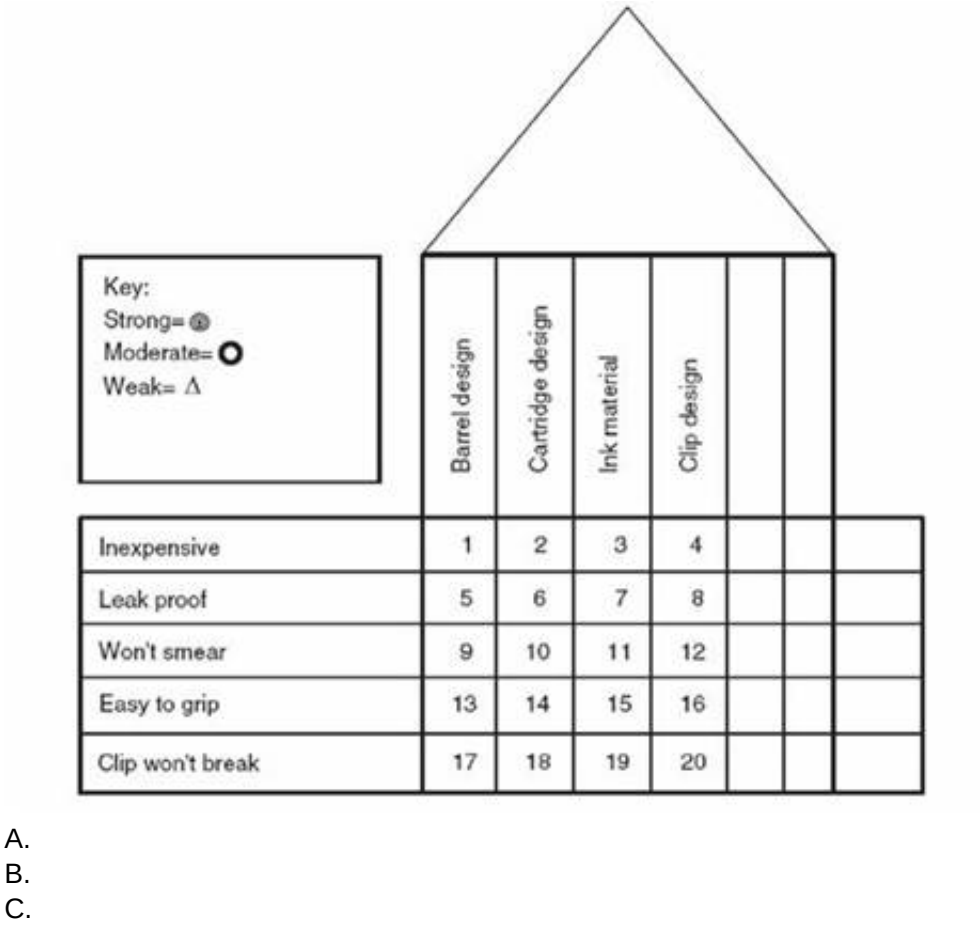


A.
B.
C.

A. none of the above

Answer: A

NEW QUESTION 139
- (Topic 2)
This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 16?



A.
B.
C.

A. none of the above

Answer: C

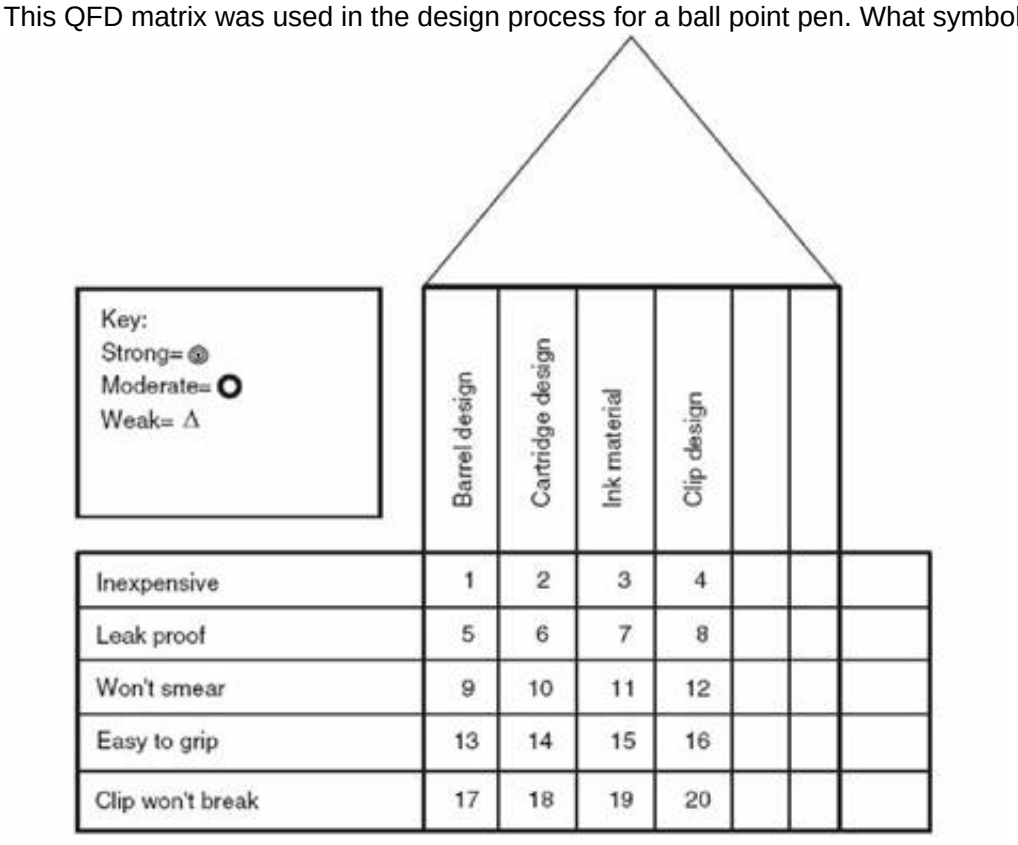
NEW QUESTION 142
- (Topic 2)
An x-bar and R chart has four part measurements per sample The control limits on the averages chart are 2.996 and 3.256. Assume the process data form a normal distribution.What is the probability that the next plotted point falls outside the control limits?

A. 0.00135
B. 0.0027
C. 0.0054
D. none of the above

Answer: B

NEW QUESTION 143
- (Topic 2)

This QFD matrix was used in the design process for a ball point pen. What symbol is appropriate for the square labeled 12?



A.
B.
C.

A. none of the above

Answer: D

NEW QUESTION 148
- (Topic 2)
Approximately what percent of the data values are smaller than the mean?

A. 25%
B. 50%
C. 75%
D. it varies from 0% and 99+% inclusive

Answer: D

NEW QUESTION 149
- (Topic 2)
Find the value of m or b1:

A. 0.25
B. 0.63
C. 0.75
D. 1.22

Answer: C

NEW QUESTION 154
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