

# IASSC

## Exam ICBB

### IASSC Lean Six Sigma – Black Belt

Version: 6.1

[ Total Questions: 300 ]

**Question No : 1**

A \_\_\_\_\_ is used primarily to track the stability of the average value of a metric of interest.

- A. NP Chart
- B. Xbar-R Chart
- C. I-MR Chart
- D. C Chart

**Answer: B**

**Question No : 2**

For her injection molding project a Belt needed to track the percentage of defectives of a particular sample set so she used a \_\_\_\_\_ to display the data?

- A. Individual Chart
- B. C Chart
- C. Xbar Chart
- D. P Chart

**Answer: D**

**Question No : 3**

Which of these graphs demonstrates conditions which would be sufficient to enable OCAP for the process?

- A. Xbar Chart
- B. Time Series Chart
- C. Neither
- D. Both

**Answer: A**

**Question No : 4**

Control Charts were developed by Dr. Shewhart to track data over time. To detect Special Cause variation the Control Charts use which of these?

- A. Data shift analysis
- B. Outlier analysis methods
- C. Center Line and Control Limits
- D. None of the above

**Answer: C**

**Question No : 5**

Common and \_\_\_\_\_ Cause Variation are the focus of Statistical Process Control.

- A. Uncommon
- B. Ordinary
- C. Special
- D. Selective

**Answer: C**

**Question No : 6**

Special Cause Variation falls into which two categories?

- A. Natural & Unnatural
- B. Short Term & Long Term
- C. Assignable & Pattern
- D. Attribute & Discreet

**Answer: C**

**Question No : 7**

Range Charts are the technique used to determine if Special Causes are occurring within the subgroups of the \_\_\_\_\_.

- A. Histograms
- B. SPC Charts
- C. NP Charts
- D. Pareto Charts

**Answer: B**

**Question No : 8**

If the production is for higher volume and monitoring and the Mean and variability is to be monitored for four machines producing product and the characteristic to be monitored is Variable Data, which SPC Chart is best to be selected?

- A. Xbar-R Chart
- B. Individual-MR Chart
- C. NP Chart
- D. CUSUM Chart

**Answer: A**

**Question No : 9**

When a Belt Poka-Yoke's a defect out of the process entirely then she should track the activity with a robust SPC system on the characteristic of interest in the defect as an early warning system.

- A. True
- B. False

**Answer: B**

**Question No : 10**

Following the completion of a LSS project the Belt not only creates a Control Plan he also develops a \_\_\_\_\_ so those involved in the process know what to do when the critical metrics move out of spec.

- A. Response Plan
- B. Call List
- C. Chain-of-Command
- D. Defect Analysis Plan

**Answer: A**

**Question No : 11**

The Control Limits width varies if the sample size varies for which type of chart?

- A. P Charts
- B. NP Charts
- C. Xbar-R Charts
- D. Time Series Charts

**Answer: A**

**Question No : 12**

Which of these elements are not included in Implementation plans?

- A. Work breakdown structure
- B. Risk management plans
- C. Cost/Benefit ratios
- D. Planned audits of work completion

**Answer: C**

**Question No : 13**

Upon completion and validation of an improvement to a process a Belt and the Project Team create a Control Plan that contains which of these?

- A. Standard operating work description of the process change
- B. Description of the monitoring system in place to assure continued compliance
- C. Summary of the targeted critical metrics for process performance measurement

D. All of the above

**Answer: D**

**Question No : 14**

What conclusion is most correct about the Experimental Design shown here with the response in the far right column?

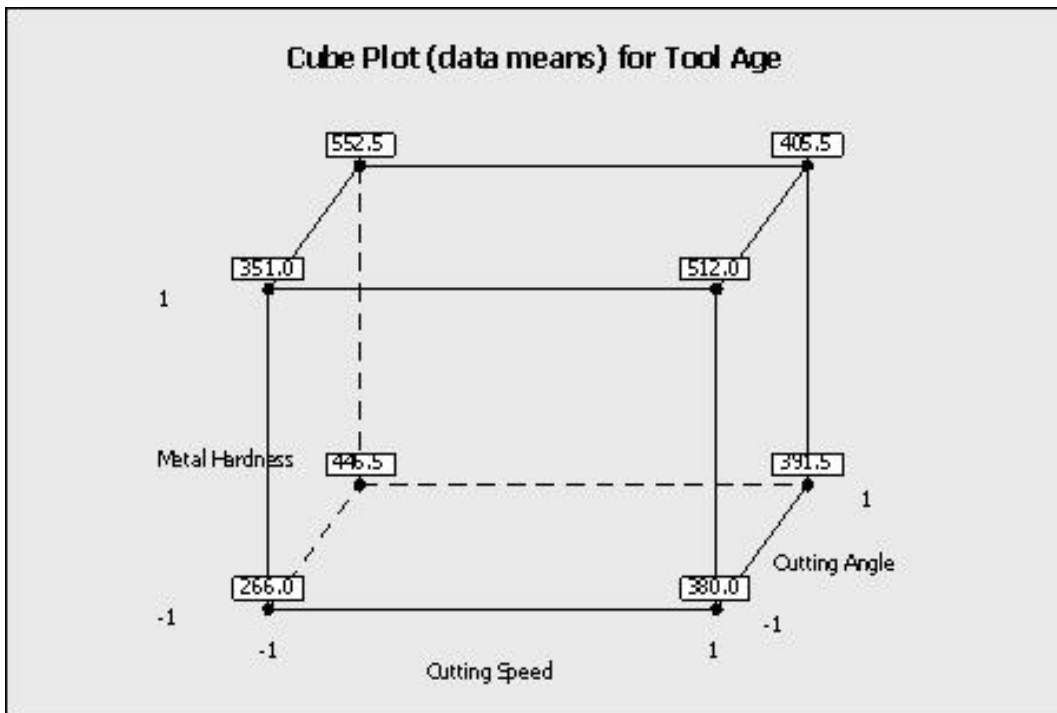
Adv	Bev	Des	Crux	Response
-1	-1	-1	-1	20
1	-1	-1	1	14
-1	1	-1	1	17
1	1	-1	-1	10
-1	-1	1	1	19
1	-1	1	-1	13
-1	1	1	-1	14
1	1	1	1	10

- A. No factor has enough statistical confidence greater than 95% to have an impact on the response rate
- B. Constant, Adv and Bev are the only factors statistically affecting the response rate with 95% confidence or more
- C. If the Adv is increased from the low level to the high level, the response rate increases
- D. The response level is statistically concluded to only need the Adv and Bev factors set at the low level to get the largest response rate
- E. This design does not have enough experimental runs to conclude anything as evidenced by the lack of P-values in the MINITABTM output

**Answer: D**

**Question No : 15**

Which statement(s) are correct about the Factorial Plot shown here?(Note:There are 3 correct answers).



- A. When the cutting speed increased from low to high level, the tool age increases
- B. The coefficient of the metal hardness is positively related to the output of tool age
- C. The coded coefficient is lower for cutting speed than the cutting angle related to the output of tool age
- D. These plots prove a statistically significance factor with 95% confidence
- E. These plots are an example of interaction plots

Answer: A,B,C

**Question No : 16**

How many experimental runs exist in a Full Factorial and fully randomized design for 4 factors with 2 replicates for the Corner Points and no Center Points? The factors in the experiment are only at 2-levels.

- A. 10
- B. 32
- C. 256
- D. 64

Answer: B

**Question No : 17**

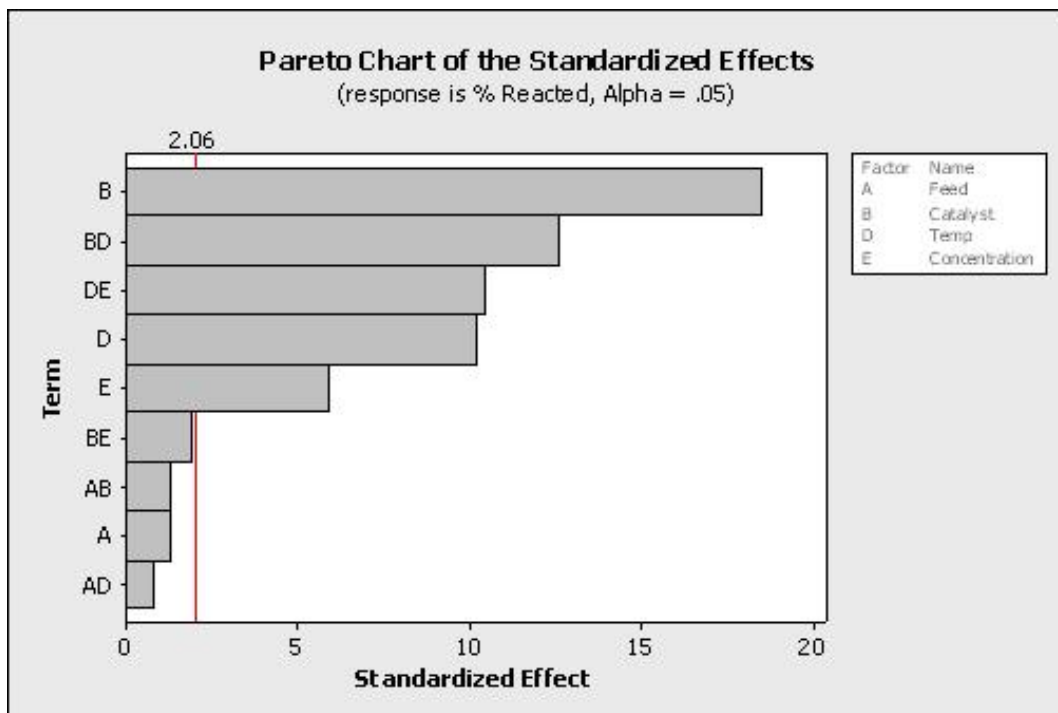
If an experiment has 5 factors and no replicates for a 2-level Experimental Design with 16 experimental runs which statement is incorrect?

- A. The Experimental Design is half-fractional
- B. The Main Effects are confounded with only 4-way interactions
- C. The Main Effects for the 5 factors are not aliased or confounded but the 2-way interactions are confounded with the 3-way interactions
- D. The experiment has 8 experimental runs with the first factor at the high level

**Answer: C**

**Question No : 18**

Which statement(s) are correct about the Pareto Chart shown here for the DOE analysis?(Note:There are 2 correct answers).



- A. It is unknown from this graph how many factors were in the Experimental Design
- B. The factors to keep in the mathematical model are E, D, DE, BD and B with an alpha risk equal to 2.06
- C. The effects to keep in the mathematical model are E, D, DE, BD and B with an alpha risk equal to 0.05
- D. The factors to keep in the mathematical model with a 5% alpha risk are BE, AB, A and AD



Answer: A,C

**Question No : 19**

Fractional Factorial, \_\_\_\_\_ and Response Surface Method are types of planned experiments.

- A. Multi-Vari Analysis
- B. Baldrige Channels
- C. One Factor at a Time or OFAT
- D. Factorial Design

Answer: D

**Question No : 20**

Relative to a Design of Experiments the term \_\_\_\_\_ refers to variables being a linear combination of each other.

- A. Mirror Image
- B. Directly Parallel
- C. Collinear
- D. None of the above

Answer: C

**Question No : 21**

Which statement(s) are incorrect about Fractional Factorial Designs?

- A. A Half Fractional Design for 5 factors has the same number of experimental runs as a Full Factorial Design for 4 factors assuming no repeats or replicates or Center Points
- B. Quarter Fractional experiments can exist for those with 4 factors
- C. Resolution V design is desired while controlling costs of experimentation
- D. Half Fractional experiments do not exist for those designs with only 2 factors

Answer: C

**Question No : 22**

If in an experiment all possible variable pairs sum to zero the design is Orthogonal.

- A. True
- B. False

**Answer: A**

**Question No : 23**

Which Experimental Design typically is most associated with the fewest number of input variables or factors in the design?

- A. Fractional Factorial design
- B. Full Factorial design
- C. Simple Linear Regression
- D. Response Surface Design

**Answer: D**

**Question No : 24**

The method of Steepest Ascent guides you toward a target inside the original inference space.

- A. True
- B. False

**Answer: B**

**Question No : 25**

Situations where standardized work needs to be incorporated include all of these except