# Six Sigma Interview Questions and Answers [Updated]

Six-sigma practitioners belong to all industries and all management levels, which is one of the reasons behind the ever-growing demand for certified Six Sigma professionals.

While there is no right and wrong in six-sigma practices, the ground principles remain the same – 'achieve near-perfection in processes.' And even the hiring managers expect the same when they interview a six-sigma certified candidate. That's why here we are with the list of most frequently asked six sigma interview questions.

If you appear for a Six Sigma job interview, the following commonly asked questions (with answers) must be on your to-do list before appearing a six sigma interview.

**Six Sigma Interview Questions Answer series is broken into two segments:**

1. Fundamental Six Sigma Interview Questions
2. Black-Belt Six Sigma Interview Questions

## Fundamental Six Sigma Interview Questions and Answers

**Q1. What is Six Sigma?**

Ans. This is the most commonly asked six sigma interview questions – Six Sigma (6σ) is a set of techniques and tools for process improvement. This data-driven and disciplined methodology can be used in any process, from manufacturing to transactional and from product to service. It was first introduced by Bill Smith while working in Motorola in 1986, and over the years, it has gained popularity in different industries and sectors for business improvement.

The six-sigma concept, a prominent business methodology, was derived to improve a product/service/process quality. Further, six-sigma approaches were merged with the concept of process control, maximized productivity, and reduced waste.

There are many advantages to using Six Sigma, and its positive effects have been the driving force in the effective functioning of many businesses.

Q2. Name some of the critical principles of six sigma.

Ans. Six sigma is used to match the most prominent word called 'perfection.' Following are some of the promising principles of six sigma:

- Primary focus on customer requirements
- Relying on statistical analysis to find out the best possible ways of working and identifying root causes of probable problems
- Process improvement
- Formulate flexibility in processes
- Effectively managing cross-functional teams

## Q3. What is meant by COPQ in Six Sigma?

Ans. Cost of Poor Quality (COPQ) is the cost caused by producing defects. This cost involves the following parameters:

- Filling the gap between the desired and actual product/service quality
- cost of lost opportunity
- Labor cost
- Rework cost
- Disposition costs
- Extra material costs
- Loss of sales/revenue
- Cost of extra utilities

COPQ does not include:

- Detection cost
- Prevention cost

## Q4. What is the definition of DPMO or DPPM?

Ans. DPMO is Defects Per Million Opportunities, and DPPM is Defective Parts Per Million.

Here the defects are inclusive of flaw or discrepancy (more than one flaw) on an item.

The formula of PPM is = (Total number of defective units in a sample/ sample size) * 1,000,000

## Q5. What is the Pareto Principle?

The Pareto principle (or the 80/20 Rule) states that, for many events, roughly 80% of the effects come from 20% of the causes. For example:

- 20% of the input = 80% of the result
- 20% of the workers' efforts deliver = 80% of the result
- 20% of the customers results in = 80% of the revenue
- 20% of the bugs cause = 80% of the crashes
- 20% of the features cause = 80% of the usage

However, people's misconception is that 20 + 80 = 100 — however it's not always accurate because most things are not 1/1.

**That's where the Pareto principle works:**

- If 20% of workers deliver 80% of the results, 20% of people should be rewarded.
- If 20% of the clients contribute to maximum revenue share, the idea is to keep these clients satisfied and motivated to buy

The Pareto principle (it's just an observation and not law) says that one must realize focusing upon the overall efforts contributed by the 20%s instead of wasting must time on 80%. Near to perfection, it is!

**Q6. Name some of the Quality Management tools in Six Sigma.**

There are several quality management tools. Some of them are:

- Cost-benefit analysis
- CTQ Tree
- SIPOC analysis
- COPIS analysis
- Taguchi methods
- 5s
- Seven wastes
- Value stream mapping:
- Visual workplace
- Quality function deployment (QFD)

**Q7. Name the different kinds of variations used in Six Sigma?**

The different kinds of variation are —

1. Mean
2. Median
3. Range
4. Mode

## Q8. Who forms the part of the Six Sigma implementation team?

The Six Sigma implementation team usually consists of the following members:

1. Six Sigma Deployment Leader
2. Six Sigma Champion
3. Six Sigma Master Black Belt (MBB)
4. Six Sigma Black Belt (BB)
5. Six Sigma Green Belt (GB)
6. Six Sigma Yellow Belt (YB)

## Q9. What is the difference between the Six Sigma DMAIC and DMADV methodologies?

The DMAIC methodology, instead of the DMADV methodology, should be used when a product or process is in existence at your company but is not meeting customer specifications or is not performing adequately.

The DMADV methodology, instead of the DMAIC methodology, should be used when:

- A product or process is not in existence at your company, and one needs to be developed.
- The existing product or process exists and has been optimized (using either DMAIC or not) and still does not meet the level of customer specification or Six Sigma level.

## Q10. Can you explain the concept of the fishbone/ Ishikawa diagram?

It is a visualization tool for categorizing the potential causes of a problem to identify its root causes.

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## Q11. What is the load testing process?

It is the process of putting demand on a software system or computing device and measuring its process.

**Q12. What level of understanding do you have regarding the statistical tools?**

This should reflect the skills that you have regarding the statistical tools concerning Six Sigma. Be honest while answering the question.

**Q13. What is the difference between *C*pk and *P*pk?**

*C*pk is process capability index, which measures how close a process is running to its specification limits, relative to the natural variability of the process, and *P*pk is process performance index, which verifies if the sample that has been generated from the process is capable of meeting Customer CTQs (requirements).

**Also, Read>> [Which is Better — Lean or Six Sigma?](#)**

**Q14. Can you explain the standard deviation?**

Standard deviation indicates the degree of variation in a set of measurements or a process by measuring the average spread of data around the mean.

**Q15. What is the process sigma calculation?**

Process sigma is a measure of the variation in a process relative to customer requirements.

**Q16. What is the 1.5 sigma shift?**

The 1.5 sigma shift adjustment takes into account what happens to every process over many cycles of manufacturing.

**Q17. What is Regression? When is it used?**

Regression Analysis is a technique used to define the relationship between an output variable and a set of input variables.

There are several types of regression like Simple Linear Regression, Multiple Linear Regression, Curvilinear Regression, Logit Regression, Probit Regression, etc., which cater to various requirements on the type of underlying data.

**Q18. What is the difference between defect and defective?**

A defect is any non-conformance of the unit of the product with the specified requirements. A defective is a unit of work that contains one or more flaws.

**Q19. What is the difference between Process Report and Product Report?**

Process Report is used with continuous data that follow a bell curve distribution, while Product Report applies to discrete data and therefore, can be used for all types of distributions.

**Q20. Explain FMEA**

FMEA is a qualitative and systematic tool, usually created within a spreadsheet, to help practitioners anticipate what might go wrong with a product or process.

**Q21. What are the X bar and R charts?**

They are a set of two charts, which is the most commonly used statistical process control procedure used to monitor process behavior and outcome over time.

**Q22. Explain Flowcharting and brainstorming?**

A flowchart is a diagram displaying the sequential steps of an event, process, or workflow. Brainstorming is a technique used to quickly generate creative or original ideas on or about a procedure, problem, product, or service.

**Q23. What is Lean Six Sigma?**

Lean Six Sigma is a performance improvement methodology that involves removing stuff that does not add value to the process and reducing variation. This philosophy relies on a collaborative team effort. Lean Six Sigma contributes to high quality and customer satisfaction.

**Q24. What are the benefits of using Lean Six Sigma?**

The main benefits offered by a Lean Six Sigma process include –

- Eliminating defects
- Manage large teams
- Ensure more efficient business processes
- Better prioritization of tasks
- Better project visibility at the team level
- Increased team productivity
- Reduced time

## Q25. What are the tools of Lean Six Sigma?

Various tools used in Lean Six Sigma include –

- FMEA
- Kaizen (continuous improvement)
- Pareto Chart
- Poka-yoke (mistake-proofing or inadvertent error prevention)
- Regression Analysis
- Value Stream Mapping

## Q26. What are the different quality levels of Six Sigma?

Six Sigma quality level is a methodology to measure the quality of a process. Every sigma level corresponds to several acceptable defects per million, and the optimum sigma level is achieved when the process accuracy goes to 3.4 defects per million opportunities. The permissible number of defects per million as per every sigma level is –

1 – 6,90,000

2 – 3,08,537

3 – 66, 807

4 – 6, 210

5 – 233

6 – 3.4

**Q27. What is FMEA?**

Failure Mode Effects Analysis (FMEA) is a tool to quantify and prioritize risk within a Six Sigma process, product, or system. This tool helps to take the essential steps for mitigating the risk.

**Q28. What is SIPOC?**

SIPOC is an acronym for Suppliers, Inputs, Process, Outputs, and Customers. It is a tool that uses information from these five-segments and creates a process map, providing a high-level overview of a Six Sigma project. These days, many organizations use the opposite acronym COPIS, putting customers first, and explaining the value of a customer to the organization.

**Q29. What is MAIC in Six Sigma?**

MAIC denotes –

Measure – Accounts for quantifying and benchmarking any process using actual data

Analyze – Includes using statistical tools to identify the root cause of any problem

Improve – Focus on solving the root cause of the problem

Control – Involves keeping checks on issues to avoid their reoccurrence and sustain the gains.

**Q30. What is DFSS in a Six Sigma process?**

DFSS is the acronym for Define for Six Sigma. It is a process improvement system that involves designing or redesigning a service or a product as per Six Sigma quality standards.

**Q31. Explain ARMI or RASI.**

ARMI is an abbreviation for Approver, Resource, Member, and Interested Party. It is a project management tool to identify the person involved in a project and its vital responsibility areas.

**Q32. What is Standard Deviation?**

Standard deviation is one of the most common methods to measure any degree of variation in a data set. It measures the average spread of data around the mean most accurately.

**Q33. What is a data collection plan?**

A data collection plan is used to collect all the critical data in a system. It covers –

- Type of data that needs to be collected or gathered
- Different data sources for analyzing a data set

**Q34. What is MSA?**

The full form of MSA is Measurement System Analysis. MSA is used to check if a measurement system is accurate. It evaluates a system's accuracy, precision, and stability.

**Q35. What do you know about the Top-down approach in six sigma?**

It is a process in Six Sigma implementation, which aligns with the business strategy and consumer requirements, and paves the way for shared understanding and vocabulary. On the other hand, the major disadvantage of this process is that it has an extensive scope, thus it is difficult to be executed within a stipulated time.

**Q36. What is VSM?**

It is the acronym of Value Stream Mapping. This methodology is used to eliminate wastes from a process and map the flow of information required to deliver a product or service.

**Q37. What is an affinity diagram?**

An Affinity Diagram is an analytical tool used to cluster or organize ideas into subgroups. These ideas are mostly generated from discussions or brainstorming sessions and used in analyzing complex issues.

**Q38. Explain the difference between a Histogram and a Boxplot.**

A histogram graphical represents the frequency distribution of numeric data, while a Box Plot summarizes the essential aspects of continuous data distribution.

These are some of the popular questions that are asked in Six Sigma interviews. Always be prepared to answer all types of questions — technical skills, interpersonal, or methodology. Being prepared and practicing are the ways you can be successful in a Six Sigma job interview.

## Black-Belt Six Sigma Interview Questions

**Q39. What is P-value?**

Ans. In six sigma, the P-value refers to the probability value, which determines the significance of results based on the null hypothesis. The null hypothesis states the cause of the event was not established; hence in reality, the statement which one tries to prove did not happen.

P-value falls between 0 and 1 and if the p-value is:

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  - **Less than 0.5 –** the event has a substantial value against the null hypothesis; hence it is significant as per statistics.

- **Greater than 0.05 –** the event has a substantial value for the null hypothesis; hence alternative hypothesis gets rejected

However, it is not suggested to entirely rely on P-value. One must also cater to calculate the effect size.

**Q40. What is effect size?**

Ans. Effect size refers to the measure of the overall magnitude experiment effect, which is quantitative. The larger the size of the impact, the better falls the relationship between the given variables. In simpler terms, the calculation of effect size results in formulating the relationship between different variables.

Q41. While initiating a six sigma project, what approach do you follow?

Ans. To make a project successful, the first step we need to practice is making people comfortable with the new change. So the below steps always make a more significant impact:

- Align all the stakeholders with the six sigma or lean concept
- Collect extensive/meaningful data

- Set a clear agenda with a handy plan for CAPEX, profits, and milestones
- Track plan vs. actions

One must also ask the questions (and find answers) like:

- What is the problem, and how frequently it occurs?
- Does anybody know the root cause and solution to the problem?
- Is the team ready for implementing the DMAIC phases?
- Which Lean and Six Sigma methods training is required?

Q42. Name some Lean Six sigma project types.

Ans. Below are some of the practical six sigma projects:

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  - **Quick win projects –** Also known as 'Just-do-it project' as the problem is known and so is the solution. Thus the fix is painless
  - **Process improvement projects –** Also known as PDCA, here the issue has an undefined cause leading to unsatisfactory results.
  - **Designing new process projects –** Also known as DFSS, This involves creating a brand new process that does not exist previously. Thus, there is no benchmark process to compare with hence it requires a VOC.

- **Redesigning new process projects –** Also known as reengineering, this method focuses on overhauling processes that are proven completely ineffective.

- **Implementing new infrastructures –** Also known as process management, this step involves establishing key measurement systems.

Q43. What are the control charts?

Ans. A control chart in six sigma is used to evaluate the durability of a process over a given period. This tool includes a graph which states that whether a process is scaled between the permissible limits. A control chart also helps in determining whether a process needs to be changed or not. This saves the time and resources of the company and saves the efforts.

Further, one can also use additional six sigma tools like Histogram/ Pareto charts on the data produced by a control chart to evaluate further observations.

Q44. What is the Kano Model?

Ans. Kano is a product development tool used to identify the Voice of the Customer (VOC) and compares the characteristics versus the degree of satisfaction each characteristic delivers. The tool was invented by Dr. Kano which defines the following 5 characteristics:

- Dissatisfying
- Must-Haves
- Customer needs
- Delighters
- Indifferent

Q45. Do you use tools like Spaghetti Diagram?

Ans. A spaghetti diagram is a part of lean tools that are used to eliminate different forms of waste. This tool helps in reducing wastes like transportation, motion, and waiting time. It tracks the movement of items like – product, paper, and/or people. It visually represents the details like flow, distance, waiting time, walking patterns of items/people. Using a spaghetti diagram offers the following benefits:

- Highlights inefficient areas/work layouts
- Highlights transport-related waste
- Reduces non-value items
- Reduces fatigue of people by minimizing moments
- Adds value to the concept of lean

Q46. In which situations would you use a SIPOC tool?

Ans. Using a SIPOC tool is recommended when the answers to the following situations are not very clear:

- Who offers the inputs for refining the process?
- Do you know which specifications are placed on the inputs?
- Who are your potential customers in context to these processes?
- What are the exact requirements of the customer?

Q48. According to you when should one use Kaizen events?

Ans. Kaizen events are helpful in establishing incremental improvements. In the following situations using a Kaizen event turns out to be the best solution:

- When a quick solution to a pressing problem is needed
- When the impact of a problem turns appears to be very significant
- When the improvement is possible to be visible in three to five days
- When an intensive cross-functional collaboration is involved

Q49. As per you what are the pros and cons of Zero Defects?

Ans. Zero Defects term was used by Mr. Philip Crosby in his book "Absolutes of Quality Management". This concept is a very popular six sigma concept which is a quest for perfection to improve quality. Below are some of the pros and cons of six sigma:

**Pros:**

- Offers enhanced value to the customer
- Reduces/eliminates hidden costs
- Helps in planning

**Cons:**

- Very difficult to attain
- Sound more abstract to most of the companies
- Outdated technology
- Tim bounded and requires a proactive approach

Q50. Why did you choose six sigma certifications?

Ans. Here you can share your experience of why did you go for a black belt six sigma certificate. Some of the possible reasons are:

- A better understanding of six sigma principles
- Helpful in all industries
- Helps in organizational growth
- Helps in reducing error
- Enhances leadership

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We hope these six sigma interview questions will help make you interview-ready so that you can confidently clear your technical round.

**All the best!**

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